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Rio Blanco
Oil Shale Company

MODULAR DEVELOPMENT PHASE
MONITORING REPORT ELEVEN

Volume 2 of 2

January – December 1982

Year End Report

Gulf Oil Corporation / Standard Oil Company (Indiana)
'A General Partnership'
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LIST OF APPENDICES

Volume 1

Appendix	Title
2-0	Atmospheric Studies
2-1	Air Quality Data
2-1.1	Plots of Gaseous Constituents Data at Site 1
2-1.2	Total Suspended Particulate Data - Sites 1, 2, and 3
2-2	Meteorological Data
2-2.1	Plots of Meteorological Data at Site 1
2-2.2	Plots of Meteorological Data at Site 2
2-2.3	Precipitation Data
2-2.4	Snow Depth Data
2-2.5	Barometric Pressure Data
2-6	Visibility Data
2-6.1	Hourly Visual Range Data - Spring 1982
2-6.2	Visibility Site Log Sheets - Spring 1982
2-6.3	Hourly Visual Range Data - Fall 1982
2-6.4	Visibility Site Log Sheets - Fall 1982
3-0	Terrestrial Studies
3-1	Vegetation Data and Analyses
3-1.1	Analyses for Browse Utilization Data
3-1.2	Analyses for Phytosociological Data
3-1.3	Range Production and Utilization Data

LIST OF APPENDICES (Continued)

Volume 1 (Continued)

Appendix	Title
3-1.4	Analyses for Range Production and Utilization Data
3-2	Mule Deer Studies
3-2.1	1982 Summer Mule Deer Pellet Group Data
3-2.2	Analyses for Mule Deer Studies
3-2.3	Mule Deer Road Kill Studies
3-2.4	Feral Horse Observations During 1982

LIST OF APPENDICES (Continued)

Volume 2

Appendix	Title
4-0	Aquatic Studies Program
4-1	Abiotic Data
4-1.1	Stream Physical and Habitat Characterization Data April, July, and October 1982
4-1.2	Stepwise Discriminant Analysis on Stream Physical Measurements at the Aquatic Stations 1982
4-1.3	Analysis of Variance (Duncan's Multiple Range Tests) Results for the Stream Physical Data 1982
4-1.4	Stream Water Chemistray Data April, July, and October 1982
4-1.5	Stepwise Discriminant Analysis Stream Water Chemistry Data
4-1.6	Analysis of Variance (Duncan's Multiple Range Tests) Results for the Stream Water Chemistry Data 1982
4-2	Biotic Data
4-2.1	Periphyton Enumeration Data Spring, Summer, and Fall 1982
4-2.2	Density and Station Occurrence of Periphyton Sampled in 1982
4-2.3	Periphyton Density and Diversity Estimates for the 1982 Sampling Season
4-2.4	Duncan's Multiple Range Analyses for Periphyton Density Evaluations
4-2.5	Benthic Macroinvertebrate Data Spring, Summer, and Fall 1982

LIST OF APPENDICES (Continued)

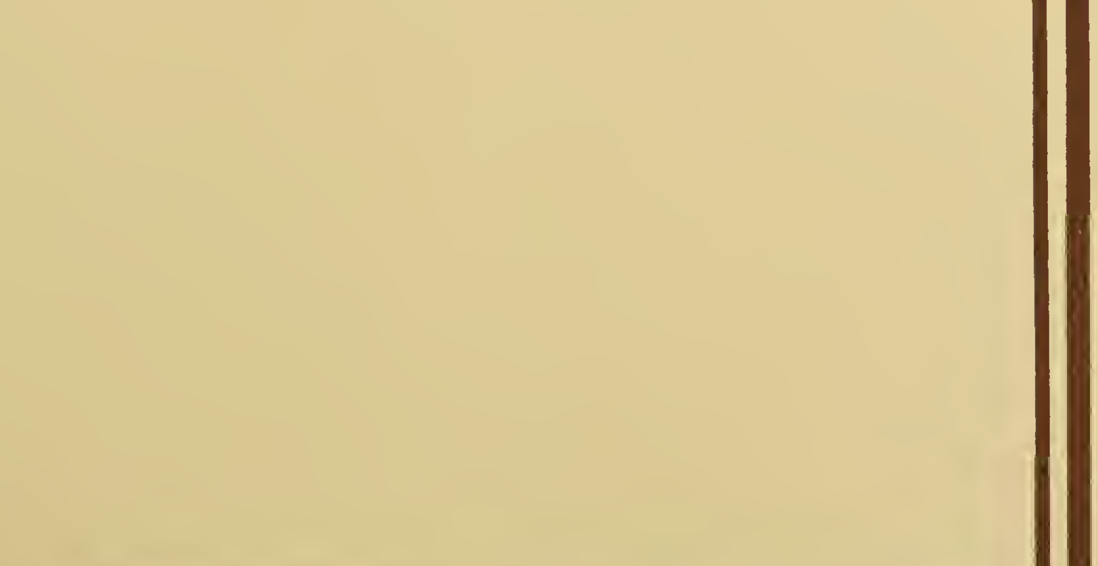
Volume 2 (Continued)

Appendix	Title
4-2.6	Density and Station Occurrence of Benthic Macroinvertebrates Sampled in 1982
4-2.7	Benthic Macroinvertebrate Density and Diversity Estimates for the 1982 Sampling Season
4-2.8	Duncan's Multiple Range Analyses for Benthic Macroinvertebrate Density Evaluations
5-0	Hydrology Studies
5-1.1	1982 Water Quality Data Listing (Alluvial Aquifers, Development Activities Monitoring, Springs and Seeps, and Upper Aquifer)
5-1.2	1982 Field Measurements Data (Development Activities Monitoring, and Springs and Seeps)
5-1.3	1982 Field Measurements Data (Alluvial Aquifers, Lower Aquifer, and Upper Aquifer)
5-1.4	1982 Water Quality MANOVA Results (Dewatering/Reinjection System, and MIS Development Area)
5-2.1	1982 Water Year USGS Data (Stream Gage Sites) (Daily Values Time Series, Water Quality Data Listing, and Duncan's Multiple Range Test Restuls - Daily Mean Flow and Conductivity)
6-0	Special Studies/Ecological Interrelationships
6-1	Experimental Revegetation Data and Analyses

LIST OF APPENDICES (Continued)

Volume 2 (Continued)

Appendix	Title
6-1.1	Plot R-1 Experimental Revegetation Data
6-1.2	Analyses for Plot R-1 Experimental Revegetation Data
6-1.3	Plot R-2 Experimental Revegetation Data
6-1.4	Analyses for Plot R-2 Experimental Revegetation Data
6-1.5	Plot R-3 Experimental Revegetation Data
6-1.6	Analyses for Plot R-3 Experimental Revegetation Data
6-2	Mule Deer Habitat Modification Studies
6-2.1	Mule Deer Habitat Modification Studies Data
6-2.2	Analyses for Mule Deer Habitat Modification Data



APPENDIX 4-O

Aquatic Studies Program

APPENDIX 4-1

Aquatic Studies Program
Abiotic Data

APPENDIX 4-1.1

Stream Physical and Habitat Characterization Data
April, July, and October 1982

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          AQUATIC ECOLOGY MONITORING PROGRAM - STREAM PHYSICAL DATA

                    STATION=CG-1          DATE=26APR82

LOCAL WEATHER CONDITIONS
  AIR TEMPERATURE (DEG C)                 18
  ESTIMATED WIND DIRECTION (DEG)          360
  ESTIMATED WIND SPEED (MPH)              10
  PERCENT CLOUD COVER                     70

FIELD WATER QUALITY MEASUREMENTS
  WATER TEMPERATURE                       REP A =14.5   REP B =15    REP C =15
  SPECIFIC CONDUCTANCE                    REP A =1350   REP B =1350  REP C =1400
  DISSOLVED OXYGEN                        REP A =6.6    REP B =6.6   REP C =6.6
  PH                                      REP A =7.5    REP B =7.6   REP C =7.6
  VISUAL TURBIDITY ESTIMATE               CLEAR
  CALCULATED TURBIDITY                    REP A =205    REP B =205
  TOTAL ALKALINITY                        REP A =460    REP B =460
  PHENYL ALKALINITY                       REP A =5      REP B =5

STREAM EVALUATION INDEXES
  SUBSTRATE COMPOSITION INDEX             2 CM SHALE AND PEBBLES, SILTING
  FLOW DURING SURVEY INDEX                ABOVE AVERAGE WATER FLOW (HIGH)
  PERCENT RIPARIAN COVER ESTIMATE         0
  BANK VEGETATION RATING                  NO SHADING, OPEN CANOPY
  BANK STABILITY RATING                   MODERATE EROSION, UNSTABLE BANKS
  BANK CONDITION RATING                   LIGHT USE AND DAMAGE
  STREAM CHANNEL STABILITY RATING         VERY LIGHT EROSION,CHANNEL STABLE
  STREAM CHANNEL CONDITION RATING         MODERATE STREAM USE AND DAMAGE

STREAM WIDTH AND FLOW MEASUREMENTS
  TOTAL STREAM WIDTH (METERS)             0.49
  DISTANCE LEFT BANK - 1 (METERS)         0.15
  DEPTH OF WATER - 1 (METERS)             0.09
  VELOCITY - 1 (RPM)                      24
  DISTANCE LEFT BANK - 2 (METERS)         0.3
  DEPTH OF WATER - 2 (METERS)             0.09
  VELOCITY - 2 (RPM)                      27
  DISTANCE LEFT BANK - 3 (METERS)         0.4
  DEPTH OF WATER - 3 (METERS)             0.09
  VELOCITY - 3 (RPM)                      26
  DISTANCE LEFT BANK - 4 (METERS)         .
  DEPTH OF WATER - 4 (METERS)             .
  VELOCITY - 4 (RPM)                      .
  DISTANCE LEFT BANK - 5 (METERS)         .
  DEPTH OF WATER - 5 (METERS)             .
  VELOCITY - 5 (RPM)                      .
  DISTANCE LEFT BANK - 6 (METERS)         .
  DEPTH OF WATER - 6 (METERS)             .
  VELOCITY - 6 (RPM)                      .
  DISTANCE LEFT BANK - 7 (METERS)         .
  DEPTH OF WATER - 7 (METERS)             .
  VELOCITY - 7 (RPM)                      .
  DISTANCE LEFT BANK - 8 (METERS)         .
  DEPTH OF WATER - 8 (METERS)             .
  VELOCITY - 8 (RPM)                      .
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              AQUATIC ECOLOGY MONITORING PROGRAM - STREAM PHYSICAL DATA

                        STATION=CG-1        DATE=20JUL82

LOCAL WEATHER CONDITIONS
  AIR TEMPERATURE (DEG C)                .
  ESTIMATED WIND DIRECTION (DEG)         .
  ESTIMATED WIND SPEED (MPH)             .
  PERCENT CLOUD COVER                    .

FIELD WATER QUALITY MEASUREMENTS
  WATER TEMPERATURE                      REP A =11.5  REP B =11.5 REP C =11.5
  SPECIFIC CONDUCTANCE                   REP A =1400  REP B =1400 REP C =1400
  DISSOLVED OXYGEN                       REP A =7     REP B =7    REP C =7
  PH                                     REP A =8.4   REP B =8.2  REP C =8.1
  VISUAL TURBIDITY ESTIMATE              CLEAR
  CALCULATED TURBIDITY                   REP A =5.5   REP B =.
  TOTAL ALKALINITY                       REP A =480   REP B =.
  PHENYL ALKALINITY                      REP A =55    REP B =.

STREAM EVALUATION INDEXES
  SUBSTRATE COMPOSITION INDEX            2 CM SHALE AND PEBBLES, SILTING
  FLOW DURING SURVEY INDEX               AVERAGE WATER FLOW (MODERATE)
  PERCENT RIPARIAN COVER ESTIMATE        10
  BANK VEGETATION RATING                 NO SHADING, OPEN CANOPY
  BANK STABILITY RATING                  LIGHT EROSION, STABLE BANKS
  BANK CONDITION RATING                  LIGHT USE AND DAMAGE
  STREAM CHANNEL STABILITY RATING        LIGHT EROSION, CHANNEL STABLE
  STREAM CHANNEL CONDITION RATING        MODERATE STREAM USE AND DAMAGE

STREAM WIDTH AND FLOW MEASUREMENTS
  TOTAL STREAM WIDTH (METERS)            1.22
  DISTANCE LEFT BANK - 1 (METERS)        0.15
  DEPTH OF WATER - 1 (METERS)            0.09
  VELOCITY - 1 (RPM)                     21
  DISTANCE LEFT BANK - 2 (METERS)        0.3
  DEPTH OF WATER - 2 (METERS)            0.09
  VELOCITY - 2 (RPM)                     29
  DISTANCE LEFT BANK - 3 (METERS)        0.46
  DEPTH OF WATER - 3 (METERS)            0.06
  VELOCITY - 3 (RPM)                     32
  DISTANCE LEFT BANK - 4 (METERS)        .
  DEPTH OF WATER - 4 (METERS)            .
  VELOCITY - 4 (RPM)                     .
  DISTANCE LEFT BANK - 5 (METERS)        .
  DEPTH OF WATER - 5 (METERS)            .
  VELOCITY - 5 (RPM)                     .
  DISTANCE LEFT BANK - 6 (METERS)        .
  DEPTH OF WATER - 6 (METERS)            .
  VELOCITY - 6 (RPM)                     .
  DISTANCE LEFT BANK - 7 (METERS)        .
  DEPTH OF WATER - 7 (METERS)            .
  VELOCITY - 7 (RPM)                     .
  DISTANCE LEFT BANK - 8 (METERS)        .
  DEPTH OF WATER - 8 (METERS)            .
  VELOCITY - 8 (RPM)                     .
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          AQUATIC ECOLOGY MONITORING PROGRAM - STREAM PHYSICAL DATA

                    STATION=CG-1        DATE=05OCT82

LOCAL WEATHER CONDITIONS
  AIR TEMPERATURE (DEG C)               4.5
  ESTIMATED WIND DIRECTION (DEG)        90
  ESTIMATED WIND SPEED (MPH)            5
  PERCENT CLOUD COVER                   85

FIELD WATER QUALITY MEASUREMENTS
  WATER TEMPERATURE                     REP A =9.5   REP B =9     REP C =9
  SPECIFIC CONDUCTANCE                  REP A =1500  REP B =1500  REP C =.
  DISSOLVED OXYGEN                      REP A =6.1   REP B =5.9   REP C =6
  PH                                    REP A =8     REP B =8     REP C =.
  VISUAL TURBIDITY ESTIMATE             CLEAR
  CALCULATED TURBIDITY                  REP A =.     REP B =.
  TOTAL ALKALINITY                      REP A =.     REP B =.
  PHENYL ALKALINITY                     REP A =.     REP B =.

STREAM EVALUATION INDEXES
  SUBSTRATE COMPOSITION INDEX           2 CM SHALE AND PEBBLES, SILTING
  FLOW DURING SURVEY INDEX              AVERAGE WATER FLOW (MODERATE)
  PERCENT RIPARIAN COVER ESTIMATE       0
  BANK VEGETATION RATING                NO SHADING, OPEN CANOPY
  BANK STABILITY RATING                 NO EROSION, TOTALLT STABLE BANKS
  BANK CONDITION RATING                 LIGHT USE AND DAMAGE
  STREAM CHANNEL STABILITY RATING       NO EROSION, CHANNEL TOTALLY STABLE
  STREAM CHANNEL CONDITION RATING       MODERATE STREAM USE AND DAMAGE

STREAM WIDTH AND FLOW MEASUREMENTS
  TOTAL STREAM WIDTH (METERS)           1.5
  DISTANCE LEFT BANK - 1 (METERS)       0.1
  DEPTH OF WATER - 1 (METERS)           0.06
  VELOCITY - 1 (RPM)                    21
  DISTANCE LEFT BANK - 2 (METERS)       0.2
  DEPTH OF WATER - 2 (METERS)           0.09
  VELOCITY - 2 (RPM)                    23
  DISTANCE LEFT BANK - 3 (METERS)       0.3
  DEPTH OF WATER - 3 (METERS)           0.06
  VELOCITY - 3 (RPM)                    25
  DISTANCE LEFT BANK - 4 (METERS)       .
  DEPTH OF WATER - 4 (METERS)           .
  VELOCITY - 4 (RPM)                    .
  DISTANCE LEFT BANK - 5 (METERS)       .
  DEPTH OF WATER - 5 (METERS)           .
  VELOCITY - 5 (RPM)                    .
  DISTANCE LEFT BANK - 6 (METERS)       .
  DEPTH OF WATER - 6 (METERS)           .
  VELOCITY - 6 (RPM)                    .
  DISTANCE LEFT BANK - 7 (METERS)       .
  DEPTH OF WATER - 7 (METERS)           .
  VELOCITY - 7 (RPM)                    .
  DISTANCE LEFT BANK - 8 (METERS)       .
  DEPTH OF WATER - 8 (METERS)           .
  VELOCITY - 8 (RPM)                    .
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        AQUATIC ECOLOGY MONITORING PROGRAM - STREAM PHYSICAL DATA

                  STATION=YC-1          DATE=26APR82

LOCAL WEATHER CONDITIONS
  AIR TEMPERATURE (DEG C)             14
  ESTIMATED WIND DIRECTION (DEG)      270
  ESTIMATED WIND SPEED (MPH)          70
  PERCENT CLOUD COVER                 10

FIELD WATER QUALITY MEASUREMENTS
  WATER TEMPERATURE                   REP A =16.5   REP B =16.5  REP C =16.5
  SPECIFIC CONDUCTANCE                REP A =1950   REP B =1950  REP C =1950
  DISSOLVED OXYGEN                    REP A =10.3   REP B =10.2  REP C =10.2
  PH                                  REP A =8.3    REP B =8.3   REP C =8.4
  VISUAL TURBIDITY ESTIMATE           CLEAR
  CALCULATED TURBIDITY                REP A =11     REP B =11.5
  TOTAL ALKALINITY                    REP A =600    REP B =600
  PHENYL ALKALINITY                   REP A =45     REP B =45

STREAM EVALUATION INDEXES
  SUBSTRATE COMPOSITION INDEX         3 TO 5 CM PEBBLES AND RUBBLE (SHALE)
  FLOW DURING SURVEY INDEX            AVERAGE WATER FLOW (MODERATE)
  PERCENT RIPARIAN COVER ESTIMATE     0
  BANK VEGETATION RATING              NO SHADING, OPEN CANOPY
  BANK STABILITY RATING               1
  BANK CONDITION RATING               NEGLIGIBLE USE AND DAMAGE
  STREAM CHANNEL STABILITY RATING     MODERATE EROSION, CHANNEL UNSTABLE
  STREAM CHANNEL CONDITION RATING     NEGLIGIBLE STREAM USE AND DAMAGE

STREAM WIDTH AND FLOW MEASUREMENTS
  TOTAL STREAM WIDTH (METERS)         0.4
  DISTANCE LEFT BANK - 1 (METERS)     0.12
  DEPTH OF WATER - 1 (METERS)         0.06
  VELOCITY - 1 (RPM)                  10
  DISTANCE LEFT BANK - 2 (METERS)     0.24
  DEPTH OF WATER - 2 (METERS)         0.06
  VELOCITY - 2 (RPM)                  14
  DISTANCE LEFT BANK - 3 (METERS)     0.37
  DEPTH OF WATER - 3 (METERS)         0.06
  VELOCITY - 3 (RPM)                  16
  DISTANCE LEFT BANK - 4 (METERS)     .
  DEPTH OF WATER - 4 (METERS)         .
  VELOCITY - 4 (RPM)                  .
  DISTANCE LEFT BANK - 5 (METERS)     .
  DEPTH OF WATER - 5 (METERS)         .
  VELOCITY - 5 (RPM)                  .
  DISTANCE LEFT BANK - 6 (METERS)     .
  DEPTH OF WATER - 6 (METERS)         .
  VELOCITY - 6 (RPM)                  .
  DISTANCE LEFT BANK - 7 (METERS)     .
  DEPTH OF WATER - 7 (METERS)         .
  VELOCITY - 7 (RPM)                  .
  DISTANCE LEFT BANK - 8 (METERS)     .
  DEPTH OF WATER - 8 (METERS)         .
  VELOCITY - 8 (RPM)                  .
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        AQUATIC ECOLOGY MONITORING PROGRAM - STREAM PHYSICAL DATA

                    STATION=YC-1          DATE=05OCT82

LOCAL WEATHER CONDITIONS
  AIR TEMPERATURE (DEG C)                 4.5
  ESTIMATED WIND DIRECTION (DEG)          200
  ESTIMATED WIND SPEED (MPH)              5
  PERCENT CLOUD COVER                     85

FIELD WATER QUALITY MEASUREMENTS
  WATER TEMPERATURE                       REP A =5.5    REP B =5.5    REP C =5.5
  SPECIFIC CONDUCTANCE                    REP A =2000   REP B =2000   REP C =.
  DISSOLVED OXYGEN                        REP A =10.2   REP B =9.8    REP C =9.6
  PH                                      REP A =8.6    REP B =8.6    REP C =.
  VISUAL TURBIDITY ESTIMATE               CLEAR
  CALCULATED TURBIDITY                    REP A =.      REP B =.
  TOTAL ALKALINITY                        REP A =.      REP B =.
  PHENYL ALKALINITY                       REP A =.      REP B =.

STREAM EVALUATION INDEXES
  SUBSTRATE COMPOSITION INDEX             HEAVY SILTING (NO SHALE OR PEBBLES)
  FLOW DURING SURVEY INDEX                BELOW AVERAGE WATER FLOW (LOW)
  PERCENT RIPARIAN COVER ESTIMATE         0
  BANK VEGETATION RATING                  NO SHADING, OPEN CANOPY
  BANK STABILITY RATING                   NO EROSION, TOTALLT STABLE BANKS
  BANK CONDITION RATING                   NEGLIGIBLE USE AND DAMAGE
  STREAM CHANNEL STABILITY RATING         NO EROSION, CHANNEL TOTALLY STABLE
  STREAM CHANNEL CONDITION RATING         LIGHT STREAM USE AND DAMAGE

STREAM WIDTH AND FLOW MEASUREMENTS
  TOTAL STREAM WIDTH (METERS)             1.1
  DISTANCE LEFT BANK - 1 (METERS)         0.5
  DEPTH OF WATER - 1 (METERS)             0.06
  VELOCITY - 1 (RPM)                      0
  DISTANCE LEFT BANK - 2 (METERS)         0.6
  DEPTH OF WATER - 2 (METERS)             0.08
  VELOCITY - 2 (RPM)                      14
  DISTANCE LEFT BANK - 3 (METERS)         0.7
  DEPTH OF WATER - 3 (METERS)             0.03
  VELOCITY - 3 (RPM)                      7
  DISTANCE LEFT BANK - 4 (METERS)         .
  DEPTH OF WATER - 4 (METERS)             .
  VELOCITY - 4 (RPM)                      .
  DISTANCE LEFT BANK - 5 (METERS)         .
  DEPTH OF WATER - 5 (METERS)             .
  VELOCITY - 5 (RPM)                      .
  DISTANCE LEFT BANK - 6 (METERS)         .
  DEPTH OF WATER - 6 (METERS)             .
  VELOCITY - 6 (RPM)                      .
  DISTANCE LEFT BANK - 7 (METERS)         .
  DEPTH OF WATER - 7 (METERS)             .
  VELOCITY - 7 (RPM)                      .
  DISTANCE LEFT BANK - 8 (METERS)         .
  DEPTH OF WATER - 8 (METERS)             .
  VELOCITY - 8 (RPM)                      .
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          AQUATIC ECOLOGY MONITORING PROGRAM - STREAM PHYSICAL DATA

                    STATION=YC-2           DATE=26APR82

LOCAL WEATHER CONDITIONS
  AIR TEMPERATURE (DEG C)                 14.5
  ESTIMATED WIND DIRECTION (DEG)          270
  ESTIMATED WIND SPEED (MPH)              15
  PERCENT CLOUD COVER                     100

FIELD WATER QUALITY MEASUREMENTS
  WATER TEMPERATURE                       REP A =17.5   REP B =17.5  REP C =17.5
  SPECIFIC CONDUCTANCE                    REP A =2800   REP B =2800  REP C =2800
  DISSOLVED OXYGEN                        REP A =9.1    REP B =9.1   REP C =9.1
  PH                                      REP A =8.4    REP B =8.5   REP C =8.5
  VISUAL TURBIDITY ESTIMATE               CLEAR
  CALCULATED TURBIDITY                    REP A =4.5    REP B =4.6
  TOTAL ALKALINITY                        REP A =800    REP B =800
  PHENYL ALKALINITY                       REP A =90     REP B =90

STREAM EVALUATION INDEXES
  SUBSTRATE COMPOSITION INDEX             6 TO 10 CM SHALE AND BOULDERS (ROCK)
  FLOW DURING SURVEY INDEX                ABOVE AVERAGE WATER FLOW (HIGH)
  PERCENT RIPARIAN COVER ESTIMATE         0
  BANK VEGETATION RATING                  NO SHADING, OPEN CANOPY
  BANK STABILITY RATING                   LIGHT EROSION, STABLE BANKS
  BANK CONDITION RATING                   LIGHT USE AND DAMAGE
  STREAM CHANNEL STABILITY RATING         LIGHT EROSION, CHANNEL STABLE
  STREAM CHANNEL CONDITION RATING         LIGHT STREAM USE AND DAMAGE

STREAM WIDTH AND FLOW MEASUREMENTS
  TOTAL STREAM WIDTH (METERS)             0.61
  DISTANCE LEFT BANK - 1 (METERS)         0.12
  DEPTH OF WATER - 1 (METERS)             0.09
  VELOCITY - 1 (RPM)                      28
  DISTANCE LEFT BANK - 2 (METERS)         0.24
  DEPTH OF WATER - 2 (METERS)             0.09
  VELOCITY - 2 (RPM)                      32
  DISTANCE LEFT BANK - 3 (METERS)         0.37
  DEPTH OF WATER - 3 (METERS)             0.12
  VELOCITY - 3 (RPM)                      34
  DISTANCE LEFT BANK - 4 (METERS)         0.49
  DEPTH OF WATER - 4 (METERS)             0.09
  VELOCITY - 4 (RPM)                      31
  DISTANCE LEFT BANK - 5 (METERS)         0.61
  DEPTH OF WATER - 5 (METERS)             0.09
  VELOCITY - 5 (RPM)                      24
  DISTANCE LEFT BANK - 6 (METERS)         .
  DEPTH OF WATER - 6 (METERS)             .
  VELOCITY - 6 (RPM)                      .
  DISTANCE LEFT BANK - 7 (METERS)         .
  DEPTH OF WATER - 7 (METERS)             .
  VELOCITY - 7 (RPM)                      .
  DISTANCE LEFT BANK - 8 (METERS)         .
  DEPTH OF WATER - 8 (METERS)             .
  VELOCITY - 8 (RPM)                      .
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          AQUATIC ECOLOGY MONITORING PROGRAM - STREAM PHYSICAL DATA

                    STATION=YC-2          DATE=19JUL82

LOCAL WEATHER CONDITIONS
  AIR TEMPERATURE (DEG C)                    .
  ESTIMATED WIND DIRECTION (DEG)             .
  ESTIMATED WIND SPEED (MPH)                 .
  PERCENT CLOUD COVER                        .

FIELD WATER QUALITY MEASUREMENTS
  WATER TEMPERATURE                          REP A =28.5   REP B =28.5  REP C =28.5
  SPECIFIC CONDUCTANCE                       REP A =2400   REP B =2400  REP C =2400
  DISSOLVED OXYGEN                           REP A =9.5    REP B =9.5   REP C =9.5
  PH                                         REP A =8.8    REP B =8.8   REP C =8.8
  VISUAL TURBIDITY ESTIMATE                  CLEAR
  CALCULATED TURBIDITY                       REP A =1.5    REP B =.
  TOTAL ALKALINITY                           REP A =760    REP B =.
  PHENYL ALKALINITY                          REP A =130    REP B =.

STREAM EVALUATION INDEXES
  SUBSTRATE COMPOSITION INDEX                6 TO 10 CM SHALE AND BOULDERS (ROCK)
  FLOW DURING SURVEY INDEX                   BELOW AVERAGE WATER FLOW (LOW)
  PERCENT RIPARIAN COVER ESTIMATE            80
  BANK VEGETATION RATING                     NO SHADING, OPEN CANOPY
  BANK STABILITY RATING                      LIGHT EROSION, STABLE BANKS
  BANK CONDITION RATING                      MODERATE USE AND DAMAGE
  STREAM CHANNEL STABILITY RATING            LIGHT EROSION, CHANNEL STABLE
  STREAM CHANNEL CONDITION RATING            MODERATE STREAM USE AND DAMAGE

STREAM WIDTH AND FLOW MEASUREMENTS
  TOTAL STREAM WIDTH (METERS)                2.44
  DISTANCE LEFT BANK - 1 (METERS)            .
  DEPTH OF WATER - 1 (METERS)                .
  VELOCITY - 1 (RPM)                         .
  DISTANCE LEFT BANK - 2 (METERS)            .
  DEPTH OF WATER - 2 (METERS)                .
  VELOCITY - 2 (RPM)                         .
  DISTANCE LEFT BANK - 3 (METERS)            .
  DEPTH OF WATER - 3 (METERS)                .
  VELOCITY - 3 (RPM)                         .
  DISTANCE LEFT BANK - 4 (METERS)            .
  DEPTH OF WATER - 4 (METERS)                .
  VELOCITY - 4 (RPM)                         .
  DISTANCE LEFT BANK - 5 (METERS)            .
  DEPTH OF WATER - 5 (METERS)                .
  VELOCITY - 5 (RPM)                         .
  DISTANCE LEFT BANK - 6 (METERS)            .
  DEPTH OF WATER - 6 (METERS)                .
  VELOCITY - 6 (RPM)                         .
  DISTANCE LEFT BANK - 7 (METERS)            .
  DEPTH OF WATER - 7 (METERS)                .
  VELOCITY - 7 (RPM)                         .
  DISTANCE LEFT BANK - 8 (METERS)            .
  DEPTH OF WATER - 8 (METERS)                .
  VELOCITY - 8 (RPM)                         .
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          AGUATIC ECOLOGY MONITORING PROGRAM - STREAM PHYSICAL DATA

                     STATION=YC-2        DATE=04OCT82

LOCAL WEATHER CONDITIONS
  AIR TEMPERATURE (DEG C)                5
  ESTIMATED WIND DIRECTION (DEG)         45
  ESTIMATED WIND SPEED (MPH)             20
  PERCENT CLOUD COVER                    35

FIELD WATER QUALITY MEASUREMENTS
  WATER TEMPERATURE                      REP A =13     REP B =13    REP C =.
  SPECIFIC CONDUCTANCE                   REP A =3100   REP B =3000  REP C =.
  DISSOLVED OXYGEN                       REP A =10.4   REP B =10.4  REP C =.
  PH                                     REP A =8.7    REP B =8.7   REP C =.
  VISUAL TURBIDITY ESTIMATE              CLEAR
  CALCULATED TURBIDITY                   REP A =.      REP B =.
  TOTAL ALKALINITY                       REP A =.      REP B =.
  PHENYL ALKALINITY                      REP A =.      REP B =.

STREAM EVALUATION INDEXES
  SUBSTRATE COMPOSITION INDEX            6 TO 10 CM SHALE AND BOULDERS (ROCK)
  FLOW DURING SURVEY INDEX               BELOW AVERAGE WATER FLOW (LOW)
  PERCENT RIPARIAN COVER ESTIMATE        25
  BANK VEGETATION RATING                 NO SHADING, OPEN CANOPY
  BANK STABILITY RATING                  NO EROSION, TOTALLT STABLE BANKS
  BANK CONDITION RATING                  MODERATE USE AND DAMAGE
  STREAM CHANNEL STABILITY RATING        NO EROSION, CHANNEL TOTALLY STABLE
  STREAM CHANNEL CONDITION RATING        HEAVY TO SEVERE STREAM USE AND DAMAGE

STREAM WIDTH AND FLOW MEASUREMENTS
  TOTAL STREAM WIDTH (METERS)            2.2
  DISTANCE LEFT BANK - 1 (METERS)        0.1
  DEPTH OF WATER - 1 (METERS)            0.18
  VELOCITY - 1 (RPM)                     0
  DISTANCE LEFT BANK - 2 (METERS)        0.3
  DEPTH OF WATER - 2 (METERS)            0.2
  VELOCITY - 2 (RPM)                     8
  DISTANCE LEFT BANK - 3 (METERS)        0.5
  DEPTH OF WATER - 3 (METERS)            0.2
  VELOCITY - 3 (RPM)                     6
  DISTANCE LEFT BANK - 4 (METERS)        .
  DEPTH OF WATER - 4 (METERS)            .
  VELOCITY - 4 (RPM)                     .
  DISTANCE LEFT BANK - 5 (METERS)        .
  DEPTH OF WATER - 5 (METERS)            .
  VELOCITY - 5 (RPM)                     .
  DISTANCE LEFT BANK - 6 (METERS)        .
  DEPTH OF WATER - 6 (METERS)            .
  VELOCITY - 6 (RPM)                     .
  DISTANCE LEFT BANK - 7 (METERS)        .
  DEPTH OF WATER - 7 (METERS)            .
  VELOCITY - 7 (RPM)                     .
  DISTANCE LEFT BANK - 8 (METERS)        .
  DEPTH OF WATER - 8 (METERS)            .
  VELOCITY - 8 (RPM)                     .
```

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          AGUATIC ECOLOGY MONITORING PROGRAM - STREAM PHYSICAL DATA

                    STATION=YC-3        DATE=27APR82

LOCAL WEATHER CONDITIONS
  AIR TEMPERATURE (DEG C)               12
  ESTIMATED WIND DIRECTION (DEG)        0
  ESTIMATED WIND SPEED (MPH)            0
  PERCENT CLOUD COVER                   100

FIELD WATER QUALITY MEASUREMENTS
  WATER TEMPERATURE                     REP A =9      REP B =9      REP C =9
  SPECIFIC CONDUCTANCE                  REP A =3750   REP B =3750   REP C =3700
  DISSOLVED OXYGEN                      REP A =10     REP B =10     REP C =10
  PH                                    REP A =8.4    REP B =8.4    REP C =8.4
  VISUAL TURBIDITY ESTIMATE             MILKY
  CALCULATED TURBIDITY                  REP A =150    REP B =150
  TOTAL ALKALINITY                      REP A =1540   REP B =1540
  PHENYL ALKALINITY                     REP A =180    REP B =180

STREAM EVALUATION INDEXES
  SUBSTRATE COMPOSITION INDEX           3 TO 5 CM PEBBLES AND RUBBLE (SHALE)
  FLOW DURING SURVEY INDEX              AVERAGE WATER FLOW (MODERATE)
  PERCENT RIPARIAN COVER ESTIMATE       0
  BANK VEGETATION RATING                NO SHADING, OPEN CANOPY
  BANK STABILITY RATING                 LIGHT EROSION, STABLE BANKS
  BANK CONDITION RATING                 NEGLIGIBLE USE AND DAMAGE
  STREAM CHANNEL STABILITY RATING       LIGHT EROSION, CHANNEL STABLE
  STREAM CHANNEL CONDITION RATING       NEGLIGIBLE STREAM USE AND DAMAGE

STREAM WIDTH AND FLOW MEASUREMENTS
  TOTAL STREAM WIDTH (METERS)           0.69
  DISTANCE LEFT BANK - 1 (METERS)       0.15
  DEPTH OF WATER - 1 (METERS)           0.05
  VELOCITY - 1 (RPM)                    29
  DISTANCE LEFT BANK - 2 (METERS)       0.3
  DEPTH OF WATER - 2 (METERS)           0.09
  VELOCITY - 2 (RPM)                    36
  DISTANCE LEFT BANK - 3 (METERS)       0.37
  DEPTH OF WATER - 3 (METERS)           0.18
  VELOCITY - 3 (RPM)                    35
  DISTANCE LEFT BANK - 4 (METERS)       0.46
  DEPTH OF WATER - 4 (METERS)           0.11
  VELOCITY - 4 (RPM)                    32
  DISTANCE LEFT BANK - 5 (METERS)       0.61
  DEPTH OF WATER - 5 (METERS)           0.04
  VELOCITY - 5 (RPM)                    30
  DISTANCE LEFT BANK - 6 (METERS)       .
  DEPTH OF WATER - 6 (METERS)           .
  VELOCITY - 6 (RPM)                    .
  DISTANCE LEFT BANK - 7 (METERS)       .
  DEPTH OF WATER - 7 (METERS)           .
  VELOCITY - 7 (RPM)                    .
  DISTANCE LEFT BANK - 8 (METERS)       .
  DEPTH OF WATER - 8 (METERS)           .
  VELOCITY - 8 (RPM)                    .
```

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           AQUATIC ECOLOGY MONITORING PROGRAM - STREAM PHYSICAL DATA

                      STATION=YC-3         DATE=20JUL82

LOCAL WEATHER CONDITIONS
  AIR TEMPERATURE (DEG C)                 .
  ESTIMATED WIND DIRECTION (DEG)          .
  ESTIMATED WIND SPEED (MPH)              .
  PERCENT CLOUD COVER                     .

FIELD WATER QUALITY MEASUREMENTS
  WATER TEMPERATURE                       REP A =18.5   REP B =18.5  REP C =18.5
  SPECIFIC CONDUCTANCE                    REP A =3600   REP B =3600  REP C =3600
  DISSOLVED OXYGEN                        REP A =8.9    REP B =9.1   REP C =9
  PH                                      REP A =8.4    REP B =8.6   REP C =8.6
  VISUAL TURBIDITY ESTIMATE               CLEAR
  CALCULATED TURBIDITY                    REP A =3.6    REP B =.
  TOTAL ALKALINITY                        REP A =1440   REP B =.
  PHENYL ALKALINITY                       REP A =90     REP B =.

STREAM EVALUATION INDEXES
  SUBSTRATE COMPOSITION INDEX             3 TO 5 CM PEBBLES AND RUBBLE (SHALE)
  FLOW DURING SURVEY INDEX                BELOW AVERAGE WATER FLOW (LOW)
  PERCENT RIPARIAN COVER ESTIMATE         60
  BANK VEGETATION RATING                  0 TO 40 PERCENT CANOPY COVER
  BANK STABILITY RATING                   VERY LIGHT EROSION, STABLE BANKS
  BANK CONDITION RATING                   MODERATE USE AND DAMAGE
  STREAM CHANNEL STABILITY RATING         LIGHT EROSION, CHANNEL STABLE
  STREAM CHANNEL CONDITION RATING         MODERATE STREAM USE AND DAMAGE

STREAM WIDTH AND FLOW MEASUREMENTS
  TOTAL STREAM WIDTH (METERS)             1.22
  DISTANCE LEFT BANK - 1 (METERS)         0.46
  DEPTH OF WATER - 1 (METERS)             0.15
  VELOCITY - 1 (RPM)                      25
  DISTANCE LEFT BANK - 2 (METERS)         .
  DEPTH OF WATER - 2 (METERS)             .
  VELOCITY - 2 (RPM)                      .
  DISTANCE LEFT BANK - 3 (METERS)         .
  DEPTH OF WATER - 3 (METERS)             .
  VELOCITY - 3 (RPM)                      .
  DISTANCE LEFT BANK - 4 (METERS)         .
  DEPTH OF WATER - 4 (METERS)             .
  VELOCITY - 4 (RPM)                      .
  DISTANCE LEFT BANK - 5 (METERS)         .
  DEPTH OF WATER - 5 (METERS)             .
  VELOCITY - 5 (RPM)                      .
  DISTANCE LEFT BANK - 6 (METERS)         .
  DEPTH OF WATER - 6 (METERS)             .
  VELOCITY - 6 (RPM)                      .
  DISTANCE LEFT BANK - 7 (METERS)         .
  DEPTH OF WATER - 7 (METERS)             .
  VELOCITY - 7 (RPM)                      .
  DISTANCE LEFT BANK - 8 (METERS)         .
  DEPTH OF WATER - 8 (METERS)             .
  VELOCITY - 8 (RPM)                      .
```

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          AQUATIC ECOLOGY MONITORING PROGRAM - STREAM PHYSICAL DATA

                      STATION=YC-3          DATE=05OCT82

LOCAL WEATHER CONDITIONS
  AIR TEMPERATURE (DEG C)               4
  ESTIMATED WIND DIRECTION (DEG)        180
  ESTIMATED WIND SPEED (MPH)            5
  PERCENT CLOUD COVER                   100

FIELD WATER QUALITY MEASUREMENTS
  WATER TEMPERATURE                     REP A =7.2     REP B =7.2    REP C =.
  SPECIFIC CONDUCTANCE                  REP A =3500    REP B =3500   REP C =.
  DISSOLVED OXYGEN                      REP A =11.1    REP B =10.7   REP C =.
  PH                                    REP A =8.9     REP B =8.9    REP C =.
  VISUAL TURBIDITY ESTIMATE             MILKY
  CALCULATED TURBIDITY                  REP A =.       REP B =.
  TOTAL ALKALINITY                      REP A =.       REP B =.
  PHENYL ALKALINITY                     REP A =.       REP B =.

STREAM EVALUATION INDEXES
  SUBSTRATE COMPOSITION INDEX           3 TO 5 CM PEBBLES AND RUBBLE (SHALE)
  FLOW DURING SURVEY INDEX              ABOVE AVERAGE WATER FLOW (HIGH)
  PERCENT RIPARIAN COVER ESTIMATE       75
  BANK VEGETATION RATING                NO SHADING, OPEN CANOPY
  BANK STABILITY RATING                 NO EROSION, TOTALLT STABLE BANKS
  BANK CONDITION RATING                 HEAVY TO SEVERE USE AND DAMAGE
  STREAM CHANNEL STABILITY RATING       NO EROSION, CHANNEL TOTALLY STABLE
  STREAM CHANNEL CONDITION RATING       HEAVY TO SEVERE STREAM USE AND DAMAGE

STREAM WIDTH AND FLOW MEASUREMENTS
  TOTAL STREAM WIDTH (METERS)           2.35
  DISTANCE LEFT BANK - 1 (METERS)       0.2
  DEPTH OF WATER - 1 (METERS)           0.11
  VELOCITY - 1 (RPM)                    40
  DISTANCE LEFT BANK - 2 (METERS)       0.3
  DEPTH OF WATER - 2 (METERS)           0.15
  VELOCITY - 2 (RPM)                    41
  DISTANCE LEFT BANK - 3 (METERS)       0.4
  DEPTH OF WATER - 3 (METERS)           0.12
  VELOCITY - 3 (RPM)                    22
  DISTANCE LEFT BANK - 4 (METERS)       0.5
  DEPTH OF WATER - 4 (METERS)           0.06
  VELOCITY - 4 (RPM)                    16
  DISTANCE LEFT BANK - 5 (METERS)       .
  DEPTH OF WATER - 5 (METERS)           .
  VELOCITY - 5 (RPM)                    .
  DISTANCE LEFT BANK - 6 (METERS)       .
  DEPTH OF WATER - 6 (METERS)           .
  VELOCITY - 6 (RPM)                    .
  DISTANCE LEFT BANK - 7 (METERS)       .
  DEPTH OF WATER - 7 (METERS)           .
  VELOCITY - 7 (RPM)                    .
  DISTANCE LEFT BANK - 8 (METERS)       .
  DEPTH OF WATER - 8 (METERS)           .
  VELOCITY - 8 (RPM)                    .
```

APPENDIX 4-1.2

Stepwise Discriminant Analysis on Stream Physical Measurements at the Aquatic Stations

1982

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                    RIO BLANCO OIL SHALE COMPANY
                 AQUATIC ECOLOGY MONITORING PROGRAM
                    STREAM PHYSICAL MEASUREMENTS

                    STEPWISE DISCRIMINANT ANALYSIS

        54 OBSERVATIONS            4 VARIABLE(S) IN THE ANALYSIS
         4 CLASS LEVELS            0 VARIABLE(S) WILL BE INCLUDED

           THE METHOD(S) FOR SELECTING VARIABLES WILL BE:
                               STEPWISE

                SIGNIFICANCE LEVEL TO ENTER =  0.1000
                SIGNIFICANCE LEVEL TO STAY  =  0.1000


                       CLASS LEVEL INFORMATION

                  STATION    FREQUENCY  PROPORTION

                  CG-1              22  0.40740741
                  YC-1               5  0.09259259
                  YC-2               6  0.11111111
                  YC-3              21  0.38888889


                            CLASS MEANS

VARIABLE       CG-1        YC-1        YC-2        YC-3

TEMP         13.364      12.800      16.500      14.762   TEMPERATURE
PH            7.786       8.180       8.367       8.576   PH
COND       1350.682    1840.000    2317.500    3654.524   CONDUCTIVITY
DO            7.295       9.500      10.267       8.933   DISSOLVED OXYGEN


                        STANDARD DEVIATIONS

    VARIABLE     TOTAL SAMPLE     WITHIN CLASS

    TEMP                5.503            5.552    TEMPERATURE
    PH                  0.522            0.388    PH
    COND             1154.388          484.678    CONDUCTIVITY
    DO                  1.777            1.469    DISSOLVED OXYGEN
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                        RIO BLANCO OIL SHALE COMPANY
                      AQUATIC ECOLOGY MONITORING PROGRAM
                        STREAM PHYSICAL MEASUREMENTS

                       STEPWISE SELECTION:   STEP    1

                      STATISTICS FOR ENTRY, DF = 3,50

VARIABLE      R**2          F        PROB > F  TOLERANCE  LABEL

TEMP        0.0396        0.687     0.5640      1.0000    TEMPERATURE
PH          0.4778       15.248     0.0001      1.0000    PH
COND        0.8337       83.553     0.0001      1.0000    CONDUCTIVITY
DO          0.3556        9.196     0.0001      1.0000    DISSOLVED OXYGEN

                       VARIABLE COND WILL BE ENTERED

                 THE FOLLOWING VARIABLE(S) HAVE BEEN ENTERED:
                                   COND


                           MULTIVARIATE STATISTICS

     WILKS' LAMBDA  = 0.16630204      F(3,50) =            83.553
                             PROB > F =0.0001
     PILLAI'S TRACE =   0.833698      F(3,50) =            83.553
                             PROB > F =0.0001

         AVERAGE SQUARED CANONICAL CORRELATION = 0.27789932
----------------------------------------------------------------------------

                       STEPWISE SELECTION:   STEP    2

                      STATISTICS FOR REMOVAL,  DF = 3,50

      VARIABLE      R**2          F      PROB > F  LABEL

      COND        0.8337       83.553     0.0001   CONDUCTIVITY


                        NO VARIABLES CAN BE REMOVED
```

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                         RIO BLANCO OIL SHALE COMPANY
                      AQUATIC ECOLOGY MONITORING PROGRAM
                         STREAM PHYSICAL MEASUREMENTS

                        STEPWISE SELECTION:  STEP   2

                       STATISTICS FOR ENTRY, DF = 3,49

              PARTIAL
VARIABLE        R**2          F        PROB > F  TOLERANCE  LABEL

TEMP          0.0347        0.587     0.6267      0.9703    TEMPERATURE
PH            0.1019        1.853     0.1500      0.5627    PH
DO            0.3658        9.422     0.0001      0.9429    DISSOLVED OXYGEN

                         VARIABLE DO WILL BE ENTERED

                 THE FOLLOWING VARIABLE(S) HAVE BEEN ENTERED:
                                 COND  DO


                           MULTIVARIATE STATISTICS

        WILKS' LAMBDA  = 0.10546319       F(6,98) =             33.962
                               PROB > F =0.0001
        PILLAI'S TRACE =    1.095599      F(6,100) =            20.190
                               PROB > F =0.0001

     .      AVERAGE SQUARED CANONICAL CORRELATION = 0.36519971
------------------------------------------------------------------------------

                         STEPWISE SELECTION:  STEP   3

                       STATISTICS FOR REMOVAL,  DF = 3,49

                    PARTIAL
          VARIABLE    R**2          F      PROB > F  LABEL

          COND       0.8363      83.470    0.0001   CONDUCTIVITY
          DO         0.3658       9.422    0.0001   DISSOLVED OXYGEN


                          NO VARIABLES CAN BE REMOVED
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                              RIO BLANCO OIL SHALE COMPANY
                           AQUATIC ECOLOGY MONITORING PROGRAM
                              STREAM PHYSICAL MEASUREMENTS

                             STEPWISE SELECTION:  STEP   3

                            STATISTICS FOR ENTRY, DF = 3,48

                 PARTIAL
VARIABLE          R**2           F        PROB > F  TOLERANCE  LABEL

TEMP             0.0596        1.014     0.3946      0.9018    TEMPERATURE
PH               0.0469        0.787     0.5071      0.5269    PH


                              NO VARIABLES CAN BE ENTERED

                             NO FURTHER STEPS ARE POSSIBLE

---------------------------------------------------------------------------------

                               STEPWISE SELECTION:  SUMMARY
                   VARIABLE          NUMBER    PARTIAL        F        PROB >
         STEP   ENTERED   REMOVED      IN        R**2     STATISTIC     F

           1    COND                    1       0.8337      83.553   0.0001
           2    DO                      2       0.3658       9.422   0.0001
```

APPENDIX 4-1.3

Analysis of Variance (Duncan's Multiple Range Tests) Results for the Stream Physical Data

1982

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                         RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM
                         STREAM PHYSICAL MEASUREMENTS

                         THREE-WAY ANALYSIS OF VARIANCE
                       COMPARING TEMPERATURE MEASUREMENTS

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: TEMP
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=40  MSE=17.6364
HARMONIC MEAN OF CELL SIZES=4.2368

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN       N  RPTYR

                A               19.500      4  1976
                A
       B        A               15.833      6  1979
       B        A
       B        A               15.500      6  1978
       B        A
       B        A   C           15.000      2  1977
       B        A   C
       B        A   C           14.000      6  1975
       B        A   C
       B        A   C           13.667     12  1981
       B        A   C
       B        A   C           13.364     11  1982
       B            C
       B            C           11.800      5  1980
                    C
                    C            8.500      2  1974
```

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                         RIO BLANCO OIL SHALE COMPANY
                      AQUATIC ECOLOGY MONITORING PROGRAM
                         STREAM PHYSICAL MEASUREMENTS

                         THREE-WAY ANALYSIS OF VARIANCE
                      COMPARING TEMPERATURE MEASUREMENTS

                          GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: TEMP
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=40  MSE=17.6364
HARMONIC MEAN OF CELL SIZES=17.8512

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN      N   SEASON

               A               19.250     16   SUMMER

               B               13.722     18   SPRING

               C               10.600     20   FALL
```

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                    RIO BLANCO OIL SHALE COMPANY
                  AQUATIC ECOLOGY MONITORING PROGRAM
                    STREAM PHYSICAL MEASUREMENTS

                   THREE-WAY ANALYSIS OF VARIANCE
                 COMPARING CONDUCTIVITY MEASUREMENTS

                   GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COND
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=40  MSE=156640
HARMONIC MEAN OF CELL SIZES=8.70057

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN       N  STATION

                A             3654.5      21  YC-3

                B             2317.5       6  YC-2

                C             1840.0       5  YC-1

                D             1350.7      22  CG-1
```

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                          RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM
                          STREAM PHYSICAL MEASUREMENTS

                         THREE-WAY ANALYSIS OF VARIANCE
                      COMPARING CONDUCTIVITY MEASUREMENTS

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COND
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=40  MSE=156640
HARMONIC MEAN OF CELL SIZES=4.2368

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN         N  RPTYR

               A              3150.0         6  1978
               A
       B       A              2712.5         4  1976
       B       A
       B       A              2650.0         2  1977
       B       A
       B       A   C          2580.0         6  1975
       B           C
       B           C          2486.4        11  1982
       B           C
       B           C          2138.0         5  1980
       B           C
       B           C          2133.3         6  1979
       B           C
       B           C          2100.0         2  1974
                   C
                   C          1999.6        12  1981
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                              RIO BLANCO OIL SHALE COMPANY
                            AQUATIC ECOLOGY MONITORING PROGRAM
                              STREAM PHYSICAL MEASUREMENTS

                             THREE-WAY ANALYSIS OF VARIANCE
                         COMPARING DISSOLVED OXYGEN MEASUREMENTS

                            GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: DO
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=40  MSE=2.04006
HARMONIC MEAN OF CELL SIZES=8.70057

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  STATION

                A           10.267      6  YC-2
                A
                A            9.500      5  YC-1
                A
                A            8.933     21  YC-3

                B            7.295     22  CG-1
```

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                          RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM
                          STREAM PHYSICAL MEASUREMENTS

                         THREE-WAY ANALYSIS OF VARIANCE
                    COMPARING DISSOLVED OXYGEN MEASUREMENTS

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: DO
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=40  MSE=2.04006
HARMONIC MEAN OF CELL SIZES=4.2368

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN        N   RPTYR

               A             9.6200        5   1980
               A
       B       A             8.9273       11   1982
       B       A
       B       A             8.8167       12   1981
       B       A
       B       A             8.8000        2   1974
       B       A
       B       A             8.2250        4   1976
       B       A
       B       A             8.1667        6   1979
       B       A
       B       A             7.9833        6   1975
       B       A
       B       A             7.5500        2   1977
       B
       B                     7.1000        6   1978
```

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                         RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM
                         STREAM PHYSICAL MEASUREMENTS

                        THREE-WAY ANALYSIS OF VARIANCE
                          COMPARING PH MEASUREMENTS

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: PH
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=40  MSE=0.133319
HARMONIC MEAN OF CELL SIZES=8.70057

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  STATION

               A             8.5762     21  YC-3
               A
        B      A             8.3667      6  YC-2
        B
        B                    8.1800      5  YC-1

               C             7.7864     22  CG-1
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                         RIO BLANCO OIL SHALE COMPANY
                      AQUATIC ECOLOGY MONITORING PROGRAM
                         STREAM PHYSICAL MEASUREMENTS

                        THREE-WAY ANALYSIS OF VARIANCE
                          COMPARING PH MEASUREMENTS

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: PH
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=40  MSE=0.133319
HARMONIC MEAN OF CELL SIZES=4.2368

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  RPTYR

                A            8.4500       6  1975
                A
                A            8.4000      11  1982
                A
       B        A            8.3000       6  1978
       B        A
       B        A            8.2333       6  1979
       B        A
       B        A            8.2000       2  1977
       B        A
       B        A            8.1500       2  1974
       B        A
       B        A            8.0500       4  1976
       B        A
       B        A            8.0333      12  1981
       B
       B                     7.7800       5  1980
```

APPENDIX 4-1.4

Stream Water Chemistry Data
April, July, and October 1982

APPENDIX 4-1.4. AQUATIC ECOLOGY MONITORING PROGRAM WATER CHEMISTRY DATA FOR TRACT C-A AND VICINITY DURING 1982

STATION= CG-1

PARAMETER	APRIL	JULY	OCTOBER
CALCIUM	81.00	78.00	78.00
MAGNESIUM	65.00	65.00	69.00
SODIUM	170.00	160.00	170.00
POTASSIUM	1.41	1.27	1.27
IRON	-0.05	-0.05	-0.05
BICARBONATE	506.00	541.00	552.00
CARBONATE	-1.00	-1.00	-1.00
HYDROXIDE	-0.50	-0.50	-0.50
SULFATES	365.00	347.00	355.50
CHLORIDE	15.10	9.38	9.75
TOT DIS SOLID	990.00	944.00	990.00
TOT SUS SOLID	-4.00	27.00	.
ALKALINITY	435.00	458.00	468.00
TOT HARDNESS	.	.	.
PHOSPHATE	0.03	0.06	0.06
AMMONIA	0.06	-0.05	0.08
NITRATE	0.10	-0.10	-0.10
NITRITE	.	.	.
FLUORIDE	0.49	0.52	0.58
BROMIDE	.	.	0.75
DIS ORG CAR	4.00	-3.00	3.60
ARSENIC	-0.01	-0.01	-0.01
BORON	-0.01	0.22	0.22
MERCURY	-0.30	-0.30	-0.00
MOLYBDENUM	-0.10	-0.10	-0.10
SELENIUM	-0.01	-0.01	-0.01
SILICA	26.00	24.00	24.00
VANADIUM	-0.50	-0.50	-0.10
ALUMINUM	.	.	-0.10
BARIUM	.	.	-0.10
BISMUTH	.	.	-0.01
CADMIUM	.	.	-0.01
CHROMIUM	.	.	-0.01
COPPER	.	.	-0.01
GALLIUM	.	.	-0.50
GERMANIUM	.	.	-0.10
LEAD	.	.	-0.01
LITHIUM	.	.	0.03
MANGANESE	.	.	0.07
NICKEL	.	.	-0.05
STRONTIUM	.	.	2.34
TITANIUM	.	.	-0.50
ZINC	.	.	-0.01
ZIRCONIUM	.	.	-10.00
TOTAL ALPHA	.	.	2.30
TOTAL BETA	.	.	1.60

APPENDIX 4-1.4. AQUATIC ECOLOGY MONITORING PROGRAM WATER CHEMISTRY DATA FOR TRACT C-A AND VICINITY DURING 1982

STATION= YC-1

PARAMETER	APRIL	JULY	OCTOBER
CALCIUM	90.00	.	91.00
MAGNESIUM	110.00	.	108.00
SODIUM	240.00	.	230.00
POTASSIUM	2.30	.	2.20
IRON	-0.05	.	0.69
BICARBONATE	627.00	.	675.00
CARBONATE	-1.00	.	-1.00
HYDROXIDE	-0.50	.	-0.50
SULFATES	597.00	.	573.60
CHLORIDE	21.30	.	18.15
TOT DIS SOLID	1450.00	.	1364.00
TOT SUS SOLID	51.00	.	.
ALKALINITY	546.00	.	566.00
TOT HARDNESS	.	.	.
PHOSPHATE	0.02	.	0.01
AMMONIA	0.03	.	0.16
NITRATE	-0.10	.	-0.10
NITRITE	.	.	.
FLUORIDE	0.30	.	0.37
BROMIDE	.	.	1.04
DIS ORG CAR	15.00	.	6.20
ARSENIC	-0.01	.	-0.01
BORON	0.35	.	0.25
MERCURY	-0.30	.	-0.00
MOLYBDENUM	-0.10	.	-0.10
SELENIUM	-0.01	.	-0.01
SILICA	17.00	.	18.00
VANADIUM	-0.50	.	-0.10
ALUMINUM	.	.	-0.10
BARIUM	.	.	-0.10
BISMUTH	.	.	-0.01
CADMIUM	.	.	-0.01
CHROMIUM	.	.	-0.01
COPPER	.	.	-0.01
GALLIUM	.	.	-0.50
GERMANIUM	.	.	-0.10
LEAD	.	.	-0.01
LITHIUM	.	.	0.02
MANGANESE	.	.	0.01
NICKEL	.	.	-0.05
STRONTIUM	.	.	2.46
TITANIUM	.	.	-0.50
ZINC	.	.	-0.01
ZIRCONIUM	.	.	-10.00
TOTAL ALPHA	.	.	4.30
TOTAL BETA	.	.	12.30

APPENDIX 4-1.4. AQUATIC ECOLOGY MONITORING PROGRAM WATER CHEMISTRY DATA FOR TRACT C-A AND VICINITY DURING 1982

STATION= YC-2

PARAMETER	APRIL	JULY	OCTOBER
CALCIUM	61.00	35.00	53.00
MAGNESIUM	220.00	170.00	200.00
SODIUM	420.00	420.00	400.00
POTASSIUM	3.20	3.00	3.30
IRON	-0.05	-0.05	-0.05
BICARBONATE	1062.00	738.00	908.00
CARBONATE	3.04	9.69	18.00
HYDROXIDE	-0.50	-0.50	-0.50
SULFATES	959.00	914.00	942.30
CHLORIDE	32.50	31.20	30.81
TOT DIS SOLID	2180.00	2092.00	2130.00
TOT SUS SOLID	25.00	-4.00	.
ALKALINITY	961.00	789.00	790.00
TOT HARDNESS	.	.	.
PHOSPHATE	0.05	0.06	-0.01
AMMONIA	0.03	0.13	0.15
NITRATE	0.10	0.20	-0.10
NITRITE	.	.	.
FLUORIDE	0.62	0.64	0.60
BROMIDE	.	.	0.45
DIS ORG CAR	11.00	8.00	8.30
ARSENIC	-0.01	-0.01	-0.01
BORON	0.49	0.47	0.38
MERCURY	-0.30	-0.30	-0.00
MOLYBDENUM	-0.10	-0.10	-0.10
SELENIUM	-0.01	-0.01	-0.01
SILICA	14.00	8.00	15.00
VANADIUM	-0.50	-0.50	-0.10
ALUMINUM	.	.	-0.10
BARIUM	.	.	-0.10
BISMUTH	.	.	-0.01
CADMIUM	.	.	-0.01
CHROMIUM	.	.	-0.01
COPPER	.	.	-0.01
GALLIUM	.	.	-0.50
GERMANIUM	.	.	-0.10
LEAD	.	.	-0.01
LITHIUM	.	.	0.03
MANGANESE	.	.	0.01
NICKEL	.	.	-0.05
STRONTIUM	.	.	4.13
TITANIUM	.	.	-0.50
ZINC	.	.	-0.01
ZIRCONIUM	.	.	-10.00
TOTAL ALPHA	.	.	16.00
TOTAL BETA	.	.	3.70

APPENDIX 4-1.4. AQUATIC ECOLOGY MONITORING PROGRAM WATER CHEMISTRY DATA FOR TRACT C-A AND VICINITY DURING 1982

STATION= YC-3

PARAMETER	APRIL	JULY	OCTOBER
CALCIUM	31.00	25.00	36.00
MAGNESIUM	110.00	93.00	103.00
SODIUM	830.00	750.00	620.00
POTASSIUM	3.60	3.30	3.00
IRON	-0.05	-0.05	-0.05
BICARBONATE	1838.00	1501.00	1295.00
CARBONATE	6.20	12.10	85.00
HYDROXIDE	-0.50	-0.50	-0.50
SULFATES	652.00	532.00	524.30
CHLORIDE	30.80	140.00	108.10
TOT DIS SOLID	2710.00	2462.00	2162.00
TOT SUS SOLID	290.00	66.00	.
ALKALINITY	1649.00	1461.00	1224.00
TOT HARDNESS	.	.	.
PHOSPHATE	0.02	0.01	-0.01
AMMONIA	0.02	0.67	0.09
NITRATE	0.10	0.60	0.54
NITRITE	.	.	.
FLUORIDE	2.56	2.53	2.10
BROMIDE	.	.	-0.01
DIS ORG CAR	11.00	6.00	5.60
ARSENIC	-0.01	-0.01	-0.01
BORON	0.86	0.78	0.57
MERCURY	-0.30	-0.30	-0.00
MOLYBDENUM	-0.10	-0.10	-0.10
SELENIUM	-0.01	-0.01	-0.01
SILICA	10.00	20.00	8.00
VANADIUM	-0.50	-0.50	.
ALUMINUM	.	.	-0.10
BARIUM	.	.	-0.10
BISMUTH	.	.	-0.01
CADMIUM	.	.	-0.01
CHROMIUM	.	.	-0.01
COPPER	.	.	-0.01
GALLIUM	.	.	-0.50
GERMANIUM	.	.	-0.10
LEAD	.	.	-0.01
LITHIUM	.	.	0.13
MANGANESE	.	.	0.02
NICKEL	.	.	-0.05
STRONTIUM	.	.	2.96
TITANIUM	.	.	-0.50
ZINC	.	.	-0.01
ZIRCONIUM	.	.	-10.00
TOTAL ALPHA	.	.	0.00
TOTAL BETA	.	.	0.00

APPENDIX 4-1.5

Stepwise Discriminant Analysis
Stream Water Chemistry Data

Stepwise Discriminant Analysis
Basic Water Quality Major Cations

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                          RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM
                      STREAM WATER CHEMISTRY MEASUREMENTS

             ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
             ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                      TO EVALUATE THE MAJOR CATIONS SAMPLED

                          STEPWISE DISCRIMINANT ANALYSIS

              23 OBSERVATIONS               5 VARIABLE(S) IN THE ANALYSIS
               4 CLASS LEVELS               0 VARIABLE(S) WILL BE INCLUDED

                 THE METHOD(S) FOR SELECTING VARIABLES WILL BE:
                                   STEPWISE

                      SIGNIFICANCE LEVEL TO ENTER =  0.1000
                      SIGNIFICANCE LEVEL TO STAY  =  0.1000


                             CLASS LEVEL INFORMATION

                        STATION     FREQUENCY  PROPORTION

                        CG-1                6  0.26086957
                        YC-1                5  0.21739130
                        YC-2                6  0.26086957
                        YC-3                6  0.26086957


                                   CLASS MEANS

VARIABLE            CG-1          YC-1          YC-2          YC-3

CA               79.3333      101.2000       51.6667       30.5000      CALCIUM
MG               69.6667      111.6000      195.3333      109.3333      MAGNESIUM
NA              166.6667      224.0000      420.5000      761.0000      SODIUM
K                 1.3200        2.3200        3.6833        3.4667      POTASSIUM
FE                0.0500        0.1780        0.0500        0.0500      IRON


                               STANDARD DEVIATIONS

          VARIABLE      TOTAL SAMPLE       WITHIN CLASS

          CA                 29.1615            11.9933      CALCIUM
          MG                 54.9387            29.1991      MAGNESIUM
          NA                242.7870            40.2694      SODIUM
          K                   1.3014             0.9115      POTASSIUM
          FE                  0.1334             0.1313      IRON
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                    RIO BLANCO OIL SHALE COMPANY
                 AQUATIC ECOLOGY MONITORING PROGRAM
                STREAM WATER CHEMISTRY MEASUREMENTS

       ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
       ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                TO EVALUATE THE MAJOR CATIONS SAMPLED

                    STEPWISE SELECTION:  STEP   1

                   STATISTICS FOR ENTRY, DF = 3,19

VARIABLE      R**2         F        PROB > F  TOLERANCE  LABEL

CA           0.8539      37.022      0.0001     1.0000   CALCIUM
MG           0.7560      19.628      0.0001     1.0000   MAGNESIUM
NA           0.9762     260.231      0.0001     1.0000   SODIUM
K            0.5763       8.614      0.0008     1.0000   POTASSIUM
FE           0.1636       1.239      0.3232     1.0000   IRON

                    VARIABLE NA WILL BE ENTERED

             THE FOLLOWING VARIABLE(S) HAVE BEEN ENTERED:
                                 NA


                       MULTIVARIATE STATISTICS

  WILKS' LAMBDA  = 0.02375910       F(3,19) =             260.231
                           PROB > F =0.0001
  PILLAI'S TRACE =   0.976241       F(3,19) =             260.231
                           PROB > F =0.0001

        AVERAGE SQUARED CANONICAL CORRELATION = 0.32541363

---------------------------------------------------------------------------

                    STEPWISE SELECTION:  STEP   2

                  STATISTICS FOR REMOVAL,  DF = 3,19

     VARIABLE      R**2         F      PROB > F  LABEL

     NA           0.9762     260.231    0.0001   SODIUM


                     NO VARIABLES CAN BE REMOVED
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                         RIO BLANCO OIL SHALE COMPANY
                      AQUATIC ECOLOGY MONITORING PROGRAM
                     STREAM WATER CHEMISTRY MEASUREMENTS

           ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
           ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                    TO EVALUATE THE MAJOR CATIONS SAMPLED

                        STEPWISE SELECTION:  STEP    2

                       STATISTICS FOR ENTRY, DF = 3,18

                  PARTIAL
        VARIABLE    R**2         F      PROB > F  TOLERANCE  LABEL

        CA         0.5411       7.076    0.0024     0.3179   CALCIUM
        MG         0.7513      18.128    0.0001     0.9459   MAGNESIUM
        K          0.3572       3.335    0.0427     0.6590   POTASSIUM
        FE         0.1448       1.016    0.4086     0.9766   IRON

                         VARIABLE MG WILL BE ENTERED

                 THE FOLLOWING VARIABLE(S) HAVE BEEN ENTERED:
                                   MG  NA


                           MULTIVARIATE STATISTICS

          WILKS' LAMBDA  = 0.00590827      F(6,36) =           72.059
                                PROB > F =0.0001
          PILLAI'S TRACE =   1.724062      F(6,38) =           39.571
                                PROB > F =0.0001

               AVERAGE SQUARED CANONICAL CORRELATION = 0.57468740

----------------------------------------------------------------------------

                        STEPWISE SELECTION:  STEP    3

                      STATISTICS FOR REMOVAL,  DF = 3,18

                        PARTIAL
              VARIABLE    R**2         F      PROB > F  LABEL

              MG         0.7513      18.128    0.0001  MAGNESIUM
              NA         0.9758     241.745    0.0001  SODIUM


                         NO VARIABLES CAN BE REMOVED
                       RIO BLANCO OIL SHALE COMPANY
                    AQUATIC ECOLOGY MONITORING PROGRAM
                   STREAM WATER CHEMISTRY MEASUREMENTS

         ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
         ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                  TO EVALUATE THE MAJOR CATIONS SAMPLED

                      STEPWISE SELECTION:  STEP   3

                     STATISTICS FOR ENTRY, DF = 3,17

                PARTIAL
VARIABLE          R**2          F        PROB > F  TOLERANCE  LABEL

CA               0.7490      16.908     0.0001      0.3057   CALCIUM
K                0.5494       6.910     0.0030      0.6144   POTASSIUM
FE               0.1458       0.967     0.4309      0.9262   IRON

                       VARIABLE CA WILL BE ENTERED

                 THE FOLLOWING VARIABLE(S) HAVE BEEN ENTERED:
                               CA   MG   NA


                         MULTIVARIATE STATISTICS

  WILKS' LAMBDA   = 0.00148310       F(9,41.5241) =        62.436
                             PROB > F =0.0001
  PILLAI'S TRACE =   2.258539        F(9,57) =             19.292
                             PROB > F =0.0001

            AVERAGE SQUARED CANONICAL CORRELATION = 0.75284624

------------------------------------------------------------------------------

                      STEPWISE SELECTION:  STEP   4

                     STATISTICS FOR REMOVAL,  DF = 3,17

                  PARTIAL
      VARIABLE      R**2          F       PROB > F  LABEL

      CA           0.7490      16.908     0.0001  CALCIUM
      MG           0.8640      35.989     0.0001  MAGNESIUM
      NA           0.9287      73.815     0.0001  SODIUM


                       NO VARIABLES CAN BE REMOVED
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                         RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM
                      STREAM WATER CHEMISTRY MEASUREMENTS

           ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
           ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                  TO EVALUATE THE MAJOR CATIONS SAMPLED

                        STEPWISE SELECTION:  STEP   4

                      STATISTICS FOR ENTRY, DF = 3,16

                 PARTIAL
   VARIABLE       R**2          F       PROB > F  TOLERANCE  LABEL

   K             0.6242       8.859    0.0011      0.2880    POTASSIUM
   FE            0.1878       1.233    0.3303      0.3054    IRON

                        VARIABLE K WILL BE ENTERED

              THE FOLLOWING VARIABLE(S) HAVE BEEN ENTERED:
                               CA  MG  NA  K


                          MULTIVARIATE STATISTICS

     WILKS' LAMBDA  = 0.00055733      F(12,42.6235) =      56.749
                                PROB > F =0.0001
     PILLAI'S TRACE =   2.416939      F(12,54) =           18.654
                                PROB > F =0.0001

         AVERAGE SQUARED CANONICAL CORRELATION = 0.80564625

--------------------------------------------------------------------------

                        STEPWISE SELECTION:  STEP   5

                      STATISTICS FOR REMOVAL,  DF = 3,16

                      PARTIAL
        VARIABLE       R**2          F      PROB > F  LABEL

        CA            0.7906      20.141    0.0001  CALCIUM
        MG            0.9203      61.609    0.0001  MAGNESIUM
        NA            0.9297      70.491    0.0001  SODIUM
        K             0.6242       8.859    0.0011  POTASSIUM

                        NO VARIABLES CAN BE REMOVED
                        RIO BLANCO OIL SHALE COMPANY
                     AQUATIC ECOLOGY MONITORING PROGRAM
                    STREAM WATER CHEMISTRY MEASUREMENTS

          ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
          ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                   TO EVALUATE THE MAJOR CATIONS SAMPLED

                       STEPWISE SELECTION:  STEP   5

                      STATISTICS FOR ENTRY, DF = 3,15

                  PARTIAL
      VARIABLE     R**2         F        PROB > F  TOLERANCE  LABEL

      FE          0.1887      1.163     0.3566      0.2878    IRON


                         NO VARIABLES CAN BE ENTERED

                        NO FURTHER STEPS ARE POSSIBLE

--------------------------------------------------------------------------------

                          STEPWISE SELECTION:  SUMMARY
             VARIABLE           NUMBER   PARTIAL       F        PROB >
 STEP   ENTERED   REMOVED         IN       R**2     STATISTIC     F       LABEL

   1    NA                        1       0.9762     260.231   0.0001    SODIUM
   2    MG                        2       0.7513      18.128   0.0001    MAGNESIUM
   3    CA                        3       0.7490      16.908   0.0001    CALCIUM
   4    K                         4       0.6242       8.859   0.0011    POTASSIUM
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Stepwise Discriminant Analysis
Basic Water Quality Major Anions

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                         RIO BLANCO OIL SHALE COMPANY
                      AQUATIC ECOLOGY MONITORING PROGRAM
                     STREAM WATER CHEMISTRY MEASUREMENTS

           ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
           ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                     TO EVALUATE THE MAJOR ANIONS SAMPLED

                        STEPWISE DISCRIMINANT ANALYSIS

            23 OBSERVATIONS            4 VARIABLE(S) IN THE ANALYSIS
             4 CLASS LEVELS            0 VARIABLE(S) WILL BE INCLUDED

               THE METHOD(S) FOR SELECTING VARIABLES WILL BE:
                                  STEPWISE

                   SIGNIFICANCE LEVEL TO ENTER =  0.1000
                   SIGNIFICANCE LEVEL TO STAY  =  0.1000


                           CLASS LEVEL INFORMATION

                     STATION    FREQUENCY  PRCPORTION

                     CG-1               6  0.26086957
                     YC-1               5  0.21739130
                     YC-2               6  0.26086957
                     YC-3               6  0.26086957



                                 CLASS MEANS

VARIABLE          CG-1          YC-1          YC-2          YC-3

HC03           552.500       620.200       910.833      1539.833     BICARBONATE
C03              1.000         1.042         5.890        21.627     CARBONATE
S04            366.583       600.720       991.217       665.217     SULFATE
CL              10.908        40.850        32.718       109.817     CHLORIDE



                             STANDARD DEVIATIONS

       VARIABLE      TOTAL SAMPLE      WITHIN CLASS

       HC03              417.8869          120.6378      BICARBONATE
       C03                17.5070           16.3329      CARBONATE
       S04               249.9923           97.9952      SULFATE
       CL                 48.3386           31.2757      CHLORIDE
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                         RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM
                      STREAM WATER CHEMISTRY MEASUREMENTS

             ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
             ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                       TO EVALUATE THE MAJOR ANIONS SAMPLED

                          STEPWISE SELECTION:  STEP   1

                         STATISTICS FOR ENTRY, DF = 3,19

        VARIABLE     R**2          F       PROB > F  TOLERANCE  LABEL

        HCO3        0.9280      81.661     0.0001      1.0000   BICARBONATE
        CO3         0.2483       2.092     0.1351      1.0000   CARBONATE
        SO4         0.8673      41.392     0.0001      1.0000   SULFATE
        CL          0.6385      11.184     0.0002      1.0000   CHLORIDE

                          VARIABLE HCO3 WILL BE ENTERED

                   THE FOLLOWING VARIABLE(S) HAVE BEEN ENTERED:
                                      HCO3


                             MULTIVARIATE STATISTICS

           WILKS' LAMBDA  = 0.07197472       F(3,19) =              81.661
                                   PROB > F =0.0001
           PILLAI'S TRACE =   0.928025       F(3,19) =              81.661
                                   PROB > F =0.0001

                AVERAGE SQUARED CANONICAL CORRELATION = 0.30934176

----------------------------------------------------------------------------

                          STEPWISE SELECTION:  STEP   2

                         STATISTICS FOR REMOVAL,  DF = 3,19

              VARIABLE     R**2          F      PROB > F  LABEL

              HCO3        0.9280      81.661    0.0001  BICARBONATE


                            NO VARIABLES CAN BE REMOVED
                   RIO BLANCO OIL SHALE COMPANY
                AQUATIC ECOLOGY MONITORING PROGRAM
               STREAM WATER CHEMISTRY MEASUREMENTS

     ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
     ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
               TO EVALUATE THE MAJOR ANIONS SAMPLED

                  STEPWISE SELECTION:  STEP   2

                 STATISTICS FOR ENTRY, DF = 3,18

           PARTIAL
VARIABLE     R**2          F       PROB > F  TOLERANCE  LABEL

CO3          0.4053       4.089     0.0223      0.8790  CARBONATE
SO4          0.8763      42.504     0.0001      0.8680  SULFATE
CL           0.3501       3.232     0.0469      0.5250  CHLORIDE

                   VARIABLE SO4 WILL BE ENTERED

           THE FOLLOWING VARIABLE(S) HAVE BEEN ENTERED:
                           HCO3  SO4


                      MULTIVARIATE STATISTICS

   WILKS' LAMBDA  = 0.00890344      F(6,36) =            57.588
                           PROB > F =0.0001
   PILLAI'S TRACE =   1.799939      F(6,38) =            56.981
                           PROB > F =0.0001

        AVERAGE SQUARED CANONICAL CORRELATION = 0.59997958

-------------------------------------------------------------------------------

                  STEPWISE SELECTION:  STEP   3

                STATISTICS FOR REMOVAL,  DF = 3,18

                 PARTIAL
      VARIABLE     R**2          F      PROB > F  LABEL

      HCO3         0.9329      83.430     0.0001  BICARBONATE
      SO4          0.8763      42.504     0.0001  SULFATE

                    NO VARIABLES CAN BE REMOVED
```

```
                         RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM
                      STREAM WATER CHEMISTRY MEASUREMENTS

            ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
            ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                      TO EVALUATE THE MAJOR ANIONS SAMPLED

                         STEPWISE SELECTION:  STEP   3

                        STATISTICS FOR ENTRY, DF = 3,17

                  PARTIAL
        VARIABLE    R**2          F        PROB > F  TOLERANCE  LABEL

        CO3        0.4248       4.185      0.0217      0.7405   CARBONATE
        CL         0.4439       4.524      0.0166      0.4715   CHLORIDE

                          VARIABLE CL WILL BE ENTERED

                  THE FOLLOWING VARIABLE(S) HAVE BEEN ENTERED:
                              HCO3  SO4  CL


                            MULTIVARIATE STATISTICS

           WILKS' LAMBDA   = 0.00495081        F(9,41.5241) =       36.246
                                     PROB > F =0.0001
           PILLAI'S TRACE =    1.927385        F(9,57) =            11.380
                                     PROB > F =0.0001

               AVERAGE SQUARED CANONICAL CORRELATION = 0.64246183

--------------------------------------------------------------------------------

                          STEPWISE SELECTION:  STEP   4

                        STATISTICS FOR REMOVAL,  DF = 3,17

                        PARTIAL
              VARIABLE    R**2          F       PROB > F  LABEL

              HCO3       0.8951      48.354     0.0001  BICARBONATE
              SO4        0.8942      47.875     0.0001  SULFATE
              CL         0.4439       4.524     0.0166  CHLORIDE


                           NO VARIABLES CAN BE REMOVED  .
                          RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM
                      STREAM WATER CHEMISTRY MEASUREMENTS

            ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
            ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                      TO EVALUATE THE MAJOR ANIONS SAMPLED

                          STEPWISE SELECTION:  STEP   4

                         STATISTICS FOR ENTRY, DF = 3,16

                PARTIAL
        VARIABLE      R**2          F        PROB > F  TOLERANCE  LABEL

        CO3          0.4008       3.567     0.0379      0.4583   CARBONATE

                           VARIABLE CO3 WILL BE ENTERED

                          ALL VARIABLES HAVE BEEN ENTERED


                              MULTIVARIATE STATISTICS

           WILKS' LAMBDA  = 0.00296658       F(12,42.6235) =      28.501
                                    PROB > F =0.0001
           PILLAI'S TRACE =   1.968554       F(12,54) =            8.588
                                    PROB > F =0.0001

                AVERAGE SQUARED CANONICAL CORRELATION = 0.65618463

------------------------------------------------------------------------------

                          STEPWISE SELECTION:  STEP   5

                        STATISTICS FOR REMOVAL,  DF = 3,16

                      PARTIAL
              VARIABLE     R**2          F      PROB > F  LABEL

              HCO3        0.9126      55.676     0.0001  BICARBONATE
              CO3         0.4008       3.567     0.0379  CARBONATE
              SO4         0.8962      46.060     0.0001  SULFATE
              CL          0.4207       3.873     0.0294  CHLORIDE

                           NO VARIABLES CAN BE REMOVED

                          NO FURTHER STEPS ARE POSSIBLE
```

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                              RIO BLANCO OIL SHALE COMPANY
                           AQUATIC ECOLOGY MONITORING PROGRAM
                          STREAM WATER CHEMISTRY MEASUREMENTS

                 ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
                 ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                          TO EVALUATE THE MAJOR ANIONS SAMPLED

                              STEPWISE SELECTION:  SUMMARY

              VARIABLE            NUMBER    PARTIAL         F       PROB >
STEP    ENTERED    REMOVED          IN       R**2      STATISTIC      F      LABEL

   1    HCO3                         1      0.9280       81.661   0.0001   BICARBONATE
   2    SO4                          2      0.8763       42.504   0.0001   SULFATE
   3    CL                           3      0.4439        4.524   0.0166   CHLORIDE
   4    CO3                          4      0.4008        3.567   0.0379   CARBONATE
```

Stepwise Discriminant Analysis
General Basic Water Quality Parameters

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                         RIO BLANCO OIL SHALE COMPANY
                      AQUATIC ECOLOGY MONITORING PROGRAM
                     STREAM WATER CHEMISTRY MEASUREMENTS

           ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
           ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                    TO EVALUATE GENERAL B.W.Q. PARAMETERS

                        STEPWISE DISCRIMINANT ANALYSIS

            14 OBSERVATIONS           8 VARIABLE(S) IN THE ANALYSIS
             4 CLASS LEVELS           0 VARIABLE(S) WILL BE INCLUDED

               THE METHOD(S) FOR SELECTING VARIABLES WILL BE:
                                  STEPWISE

                    SIGNIFICANCE LEVEL TO ENTER =  0.1000
                    SIGNIFICANCE LEVEL TO STAY  =  0.1000


                           CLASS LEVEL INFORMATION

                      STATION    FREQUENCY  PROPORTION

                      CG-1               3  0.21428571
                      YC-1               3  0.21428571
                      YC-2               4  0.28571429
                      YC-3               4  0.28571429



                                 CLASS MEANS

VARIABLE         CG-1         YC-1         YC-2         YC-3

TDS           993.333     1509.333     2280.750     2582.000     TOT DISS SOLIDS
TSS            22.667       34.667       17.250      105.750     TOT SUSP SOLIDS
ALK           459.333      560.667      877.000     1482.750     TOT ALKALINITY
PO4             0.033        0.023        0.052        0.017     TOT PHOSPHATE
NH3             0.050        0.050        0.113        0.207     AMMONIA
NO3             0.100        0.070        0.102        0.240     NITRATE
F               0.453        0.210        0.493        1.795     FLUORIDE
DOC             3.333       11.000        9.000        8.750     DIS ORG CARBON
```

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                         RIO BLANCO OIL SHALE COMPANY
                      AQUATIC ECOLOGY MONITORING PROGRAM
                     STREAM WATER CHEMISTRY MEASUREMENTS

           ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
           ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                  TO EVALUATE GENERAL B.W.Q. PARAMETERS

                        STEPWISE SELECTION:  STEP   1

                       STATISTICS FOR ENTRY, DF = 3,10

VARIABLE      R**2          F        PROB > F  TOLERANCE  LABEL

TDS          0.9468      59.381      0.0001      1.0000    TOT DISS SOLIDS
TSS          0.2822       1.310      0.3247      1.0000    TOT SUSP SOLIDS
ALK          0.9758     134.449      0.0001      1.0000    TOT ALKALINITY
PO4          0.4884       3.182      0.0717      1.0000    TOT PHOSPHATE
NH3          0.1535       0.604      0.6269      1.0000    AMMONIA
NO3          0.2456       1.085      0.3994      1.0000    NITRATE
F            0.6949       7.591      0.0062      1.0000    FLUORIDE
DOC          0.6078       5.167      0.0206      1.0000    DIS ORG CARBON

                        VARIABLE ALK WILL BE ENTERED

                THE FOLLOWING VARIABLE(S) HAVE BEEN ENTERED:
                                    ALK


                          MULTIVARIATE STATISTICS

     WILKS' LAMBDA   = 0.02419282      F(3,10) =           134.449
                               PROB > F =0.0001
     PILLAI'S TRACE =   0.975807       F(3,10) =           134.449
                               PROB > F =0.0001

          AVERAGE SQUARED CANONICAL CORRELATION = 0.32526906

----------------------------------------------------------------------------------

                        STEPWISE SELECTION:  STEP   2

                       STATISTICS FOR REMOVAL,  DF = 3,10

     VARIABLE      R**2          F       PROB > F  LABEL

     ALK          0.9758     134.449     0.0001   TOT ALKALINITY


                          NO VARIABLES CAN BE REMOVED
                        RIO BLANCO OIL SHALE COMPANY
                     AQUATIC ECOLOGY MONITORING PROGRAM
                    STREAM WATER CHEMISTRY MEASUREMENTS

          ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
          ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                   TO EVALUATE GENERAL B.W.Q. PARAMETERS

                       STEPWISE SELECTION:  STEP   2

                       STATISTICS FOR ENTRY, DF = 3,9

            PARTIAL
VARIABLE     R**2          F      PROB > F  TOLERANCE  LABEL

TDS         0.7965      11.745     0.0018     0.2275   TOT DISS SOLIDS
TSS         0.6543       5.677     0.0184     0.6803   TOT SUSP SOLIDS
PO4         0.4655       2.613     0.1155     0.9280   TOT PHOSPHATE
NH3         0.0645       0.207     0.8892     0.8717   AMMONIA
NO3         0.1499       0.529     0.6736     0.8222   NITRATE
F           0.3626       1.707     0.2347     0.3230   FLUORIDE
DOC         0.5988       4.477     0.0348     0.9284   DIS ORG CARBON

                        VARIABLE TDS WILL BE ENTERED

                 THE FOLLOWING VARIABLE(S) HAVE BEEN ENTERED:
                              TDS  ALK


                          MULTIVARIATE STATISTICS

    WILKS' LAMBDA  = 0.00492210       F(6,18) =           39.761
                          PROB > F =0.0001
    PILLAI'S TRACE =   1.759618       F(6,20) =           24.400
                          PROB > F =0.0001

        AVERAGE SQUARED CANONICAL CORRELATION = 0.58653941

-------------------------------------------------------------------------------

                       STEPWISE SELECTION:  STEP   3

                     STATISTICS FOR REMOVAL,  DF = 3,9

                 PARTIAL
     VARIABLE     R**2          F     PROB > F  LABEL

     TDS         0.7965      11.745    0.0018   TOT DISS SOLIDS
     ALK         0.9074      29.396    0.0001   TOT ALKALINITY


                        NO VARIABLES CAN BE REMOVED
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                         RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM
                      STREAM WATER CHEMISTRY MEASUREMENTS

               ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
               ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                        TO EVALUATE GENERAL B.W.Q. PARAMETERS

                          STEPWISE SELECTION:  STEP   3

                          STATISTICS FOR ENTRY, DF = 3,8

                   PARTIAL
VARIABLE            R**2          F        PROB > F  TOLERANCE  LABEL

TSS                0.6400       4.741     0.0348       0.1422   TOT SUSP SOLIDS
PO4                0.6314       4.568     0.0381       0.1982   TOT PHOSPHATE
NH3                0.0662       0.189     0.9009       0.2232   AMMONIA
NO3                0.2308       0.800     0.5279       0.1801   NITRATE
F                  0.1768       0.573     0.6487       0.0572   FLUORIDE
DOC                0.5041       2.711     0.1154       0.1838   DIS ORG CARBON

                          VARIABLE TSS WILL BE ENTERED

                    THE FOLLOWING VARIABLE(S) HAVE BEEN ENTERED:
                                 TDS   TSS   ALK


                             MULTIVARIATE STATISTICS

        WILKS' LAMBDA   = 0.00177180       F(9,19.6205) =        27.269
                                     PROB > F =0.0001
        PILLAI'S TRACE =   1.820897        F(9,30) =              5.148
                                     PROB > F =0.0003

              AVERAGE SQUARED CANONICAL CORRELATION = 0.60696555

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                          STEPWISE SELECTION:  STEP   4

                         STATISTICS FOR REMOVAL,  DF = 3,8

                   PARTIAL
        VARIABLE     R**2          F       PROB > F  LABEL

        TDS         0.7882        9.922     0.0045   TOT DISS SOLIDS
        TSS         0.6400        4.741     0.0348   TOT SUSP SOLIDS
        ALK         0.9583       61.235     0.0001   TOT ALKALINITY


                          NO VARIABLES CAN BE REMOVED
                         RIO BLANCO OIL SHALE COMPANY
                        AQUATIC ECOLOGY MONITORING PROGRAM
                       STREAM WATER CHEMISTRY MEASUREMENTS

              ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
              ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                     TO EVALUATE GENERAL B.W.Q. PARAMETERS

                          STEPWISE SELECTION:  STEP   4

                          STATISTICS FOR ENTRY, DF = 3,7

                 PARTIAL
VARIABLE          R**2          F       PROB > F  TOLERANCE  LABEL

PO4              0.6783       4.919    0.0381      0.1273    TOT PHOSPHATE
NH3              0.0078       0.018    0.9963      0.1257    AMMONIA
NO3              0.1258       0.336    0.8002      0.0934    NITRATE
F                0.0774       0.196    0.8961      0.0572    FLUORIDE
DOC              0.4543       1.942    0.2114      0.1175    DIS ORG CARBON

                           VARIABLE PO4 WILL BE ENTERED

                   THE FOLLOWING VARIABLE(S) HAVE BEEN ENTERED:
                               TDS  TSS  ALK  PO4


                             MULTIVARIATE STATISTICS

     WILKS' LAMBDA  = 0.00057007       F(12,18.8118) =      24.819
                               PROB > F =0.0001
     PILLAI'S TRACE =   2.116726       F(12,27) =            5.392
                               PROB > F =0.0001

          AVERAGE SQUARED CANONICAL CORRELATION = 0.70557519

-------------------------------------------------------------------------------

                          STEPWISE SELECTION:  STEP   5

                        STATISTICS FOR REMOVAL,  DF = 3,7

                       PARTIAL
          VARIABLE      R**2         F      PROB > F  LABEL

          TDS          0.8313     11.500    0.0043   TOT DISS SOLIDS
          TSS          0.6858      5.093    0.0352   TOT SUSP SOLIDS
          ALK          0.9571     52.014    0.0001   TOT ALKALINITY
          PO4          0.6783      4.919    0.0381   TOT PHOSPHATE

                           NO VARIABLES CAN BE REMOVED
                        RIO BLANCO OIL SHALE COMPANY
                     AQUATIC ECOLOGY MONITORING PROGRAM
                    STREAM WATER CHEMISTRY MEASUREMENTS

          ABSOLUTE VALUES FOR THE BASIC WATER CHEMISTRY PARAMETERS
          ARE USED IN THIS STEPWISE DISCRIMINANT FUNCTION ANALYSIS
                   TO EVALUATE GENERAL B.W.Q. PARAMETERS

                       STEPWISE SELECTION:  STEP   5

                       STATISTICS FOR ENTRY, DF = 3,6

               PARTIAL
VARIABLE        R**2          F        PROB > F  TOLERANCE  LABEL

NH3            0.0800       0.174     0.9102     0.1188    AMMONIA
NO3            0.2539       0.680     0.5954     0.0863    NITRATE
F              0.1758       0.427     0.7413     0.0540    FLUORIDE
DOC            0.4374       1.555     0.2950     0.1020    DIS ORG CARBON

                        NO VARIABLES CAN BE ENTERED

                        NO FURTHER STEPS ARE POSSIBLE

-------------------------------------------------------------------------------

                        STEPWISE SELECTION:  SUMMARY
                 VARIABLE          NUMBER    PARTIAL        F        PROB >
     STEP   ENTERED    REMOVED       IN        R**2     STATISTIC      F

       1    ALK                      1       0.9758      134.449   0.0001
       2    TDS                      2       0.7965       11.745   0.0018
       3    TSS                      3       0.6400        4.741   0.0348
       4    PO4                      4       0.6783        4.919   0.0381
```

APPENDIX 4-1.6

Analysis of Variance (Duncan's Multiple Range Tests) Results for the Stream Water Chemistry Data

1982

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                                   RIO BLANCO OIL SHALE COMPANY
                                AQUATIC ECOLOGY MONITORING PROGRAM
                               STREAM WATER CHEMISTRY MEASUREMENTS
                                  THREE-WAY ANALYSIS OF VARIANCE
                           TO EVALUATE SIGNIFICANT MAJOR B.W.Q. CATIONS
                            ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                                 GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CA
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=120.508
HARMONIC MEAN OF CELL SIZES=5.71429

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN      N  STATION

                A              101.20      5  YC-1

                B               79.33      6  CG-1

                C               51.67      6  YC-2

                D               30.50      6  YC-3
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                              RIO BLANCO OIL SHALE COMPANY
                           AQUATIC ECOLOGY MONITORING PROGRAM
                          STREAM WATER CHEMISTRY MEASUREMENTS
                             THREE-WAY ANALYSIS OF VARIANCE
                      TO EVALUATE SIGNIFICANT MAJOR B.W.Q. CATIONS
                       ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                               GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: MG
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=591.555
HARMONIC MEAN OF CELL SIZES=5.71429

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN       N  STATION

                A              195.33       6  YC-2

                B              111.60       5  YC-1
                B
                B              109.33       6  YC-3

                C               69.67       6  CG-1
```

```
                       RIO BLANCO OIL SHALE COMPANY
                     AQUATIC ECOLOGY MONITORING PROGRAM
                    STREAM WATER CHEMISTRY MEASUREMENTS
                       THREE-WAY ANALYSIS OF VARIANCE
                  TO EVALUATE SIGNIFICANT MAJOR B.W.Q. CATIONS
                   ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                       GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: NA
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=1473.48
HARMONIC MEAN OF CELL SIZES=5.71429

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  STATION

                A           761.00      6  YC-3

                B           420.50      6  YC-2

                C           224.00      5  YC-1

                D           166.67      6  CG-1
```

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                              RIO BLANCO OIL SHALE COMPANY
                           AQUATIC ECOLOGY MONITORING PROGRAM
                          STREAM WATER CHEMISTRY MEASUREMENTS
                             THREE-WAY ANALYSIS OF VARIANCE
                      TO EVALUATE SIGNIFICANT MAJOR B.W.Q. CATIONS
                        ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                             GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: K
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=0.758243
HARMONIC MEAN OF CELL SIZES=5.71429

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  STATION

                A           3.6833      6  YC-2
                A
                A           3.4667      6  YC-3

                B           2.3200      5  YC-1
                B
                B           1.3200      6  CG-1
```

```
                          RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM
                      STREAM WATER CHEMISTRY MEASUREMENTS
                         THREE-WAY ANALYSIS OF VARIANCE
                  TO EVALUATE SIGNIFICANT MAJOR B.W.Q. CATIONS
                   ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CA
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=120.508
HARMONIC MEAN OF CELL SIZES=7.63636

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN       N   SEASON

               A               72.875       8   SPRING
               A
       B       A               62.250       8   FALL
       B
       B                       56.286       7   SUMMER
```

```
                           RIO BLANCO OIL SHALE COMPANY
                        AQUATIC ECOLOGY MONITORING PROGRAM
                       STREAM WATER CHEMISTRY MEASUREMENTS
                          THREE-WAY ANALYSIS OF VARIANCE
                   TO EVALUATE SIGNIFICANT MAJOR B.W.Q. CATIONS
                    ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                          GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: MG
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=591.555
HARMONIC MEAN OF CELL SIZES=7.63636

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN      N  SEASON

                A             144.38      8  SPRING

                B             111.00      7  SUMMER
                B
                B             109.00      8  FALL
```

```
                         RIO BLANCO OIL SHALE COMPANY
                      AQUATIC ECOLOGY MONITORING PROGRAM
                     STREAM WATER CHEMISTRY MEASUREMENTS
                        THREE-WAY ANALYSIS OF VARIANCE
                 TO EVALUATE SIGNIFICANT MAJOR B.W.Q. CATIONS
                   ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: NA
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=1473.48
HARMONIC MEAN OF CELL SIZES=7.63636

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN      N  SEASON

               A               419.86      7  SUMMER
               A
       B       A               411.25      8  SPRING
       B
       B                       372.50      8  FALL
```

```
                         RIO BLANCO OIL SHALE COMPANY
                      AQUATIC ECOLOGY MONITORING PROGRAM
                     STREAM WATER CHEMISTRY MEASUREMENTS
                        THREE-WAY ANALYSIS OF VARIANCE
                TO EVALUATE SIGNIFICANT MAJOR B.W.Q. ANIONS
                 ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: HCO3
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16   MSE=12799.2
HARMONIC MEAN OF CELL SIZES=5.71429

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN        N  STATION

                A             1539.8        6  YC-3

                B              910.8        6  YC-2

                C              620.2        5  YC-1
                C
                C              552.5        6  CG-1
```

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                          RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM
                      STREAM WATER CHEMISTRY MEASUREMENTS
                         THREE-WAY ANALYSIS OF VARIANCE
                  TO EVALUATE SIGNIFICANT MAJOR B.W.Q. ANIONS
                   ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: SO4
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=4901.95
HARMONIC MEAN OF CELL SIZES=5.71429

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                    MEAN         N  STATION

               A                   991.22         6  YC-2

               B                   665.22         6  YC-3
               B
               B                   600.72         5  YC-1

               C                   366.58         6  CG-1
```

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                              RIO BLANCO OIL SHALE COMPANY
                           AQUATIC ECOLOGY MONITORING PROGRAM
                          STREAM WATER CHEMISTRY MEASUREMENTS
                             THREE-WAY ANALYSIS OF VARIANCE
                     TO EVALUATE SIGNIFICANT MAJOR B.W.Q. ANIONS
                      ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                            GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CL
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=1061.6
HARMONIC MEAN OF CELL SIZES=5.71429

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN  GROUPING                  MEAN      N  STATION

                A               109.82      6  YC-3

                B                40.85      5  YC-1
                B
                B                32.72      6  YC-2
                B
                B                10.91      6  CG-1
```

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                         RIO BLANCO OIL SHALE COMPANY
                      AQUATIC ECOLOGY MONITORING PROGRAM
                     STREAM WATER CHEMISTRY MEASUREMENTS
                        THREE-WAY ANALYSIS OF VARIANCE
                 TO EVALUATE SIGNIFICANT MAJOR B.W.Q. ANIONS
                  ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: S04
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=4901.95
HARMONIC MEAN OF CELL SIZES=11.4783

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING            MEAN      N  RPTYR

               A           698.33     12  1981

               B           614.70     11  1982
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                              RIO BLANCO OIL SHALE COMPANY
                           AQUATIC ECOLOGY MONITORING PROGRAM
                          STREAM WATER CHEMISTRY MEASUREMENTS
                             THREE-WAY ANALYSIS OF VARIANCE
                      TO EVALUATE SIGNIFICANT MAJOR B.W.Q. ANIONS
                       ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                             GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: SO4
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=4901.95
HARMONIC MEAN OF CELL SIZES=7.63636

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN      N  SEASON

                A               722.13     8  SPRING

                B               624.71     7  SUMMER
                B
                B               623.96     8  FALL
```

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                          RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM
                      STREAM WATER CHEMISTRY MEASUREMENTS
                         THREE-WAY ANALYSIS OF VARIANCE
               TO EVALUATE SIGNIFICANT GENERAL B.W.Q. PARAMETERS
                    ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: ALK
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=7958.89
HARMONIC MEAN OF CELL SIZES=5.71429

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  STATION

                A            1442.3      6  YC-3

                B             822.5      6  YC-2

                C             535.0      5  YC-1
                C
                C             470.2      6  CG-1
```

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                          RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM
                      STREAM WATER CHEMISTRY MEASUREMENTS
                         THREE-WAY ANALYSIS OF VARIANCE
               TO EVALUATE SIGNIFICANT GENERAL B.W.Q. PARAMETERS
                     ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                          GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: TDS
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=15570.5
HARMONIC MEAN OF CELL SIZES=5.71429

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN  GROUPING                MEAN      N  STATION

                 A            2515.8      6  YC-3

                 B            2222.8      6  YC-2

                 C            1428.8      5  YC-1

                 D            1013.7      6  CG-1
```

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                             RIO BLANCO OIL SHALE COMPANY
                          AQUATIC ECOLOGY MONITORING PROGRAM
                         STREAM WATER CHEMISTRY MEASUREMENTS
                            THREE-WAY ANALYSIS OF VARIANCE
                  TO EVALUATE SIGNIFICANT GENERAL B.W.Q. PARAMETERS
                        ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                           GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: ALK
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=7958.89
HARMONIC MEAN OF CELL SIZES=7.63636

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN      N  SEASON

                 A             871.75      8  SPRING
                 A
                 A             860.14      7  SUMMER

                 B             761.25      8  FALL
```

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                          RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM
                      STREAM WATER CHEMISTRY MEASUREMENTS
                         THREE-WAY ANALYSIS OF VARIANCE
                TO EVALUATE SIGNIFICANT GENERAL B.W.Q. PARAMETERS
                     ABSLOUTE VALUES ARE USED IN THIS ANALYSIS

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: TDS
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=15570.5
HARMONIC MEAN OF CELL SIZES=7.63636

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN      N  SEASON

                A             1928.8      8  SPRING
                A
        B       A             1797.3      7  SUMMER
        B
        B                     1705.9      8  FALL
```

APPENDIX 4-2

Aquatic Studies Program
Biotic Data

APPENDIX 4-2.1

Periphyton Enumeration Data
Spring, Summer, and Fall 1982

APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= CG-1
SAMPLING DATE= 26APR82

	NUMBER OBSERVED					
TAXONOMIC NAME	REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
CYCLOTELLA MENEGHINIANA	0	0	0	0	1	0
MELOSIRA GRANULATA	0	0	0	0	2	0
STEPHANODISCUS HANTZSCHII	0	3	0	0	3	0
THALASSIOSIRA FLUVIATILIS	0	1	0	0	1	0
CALOTHRIX SPECIES	0	0	1	7	0	0
DEAD PENNATE DIATOMS	26	20	19	8	3	1
LIVE CENTRIC DIATOMS	0	2	1	0	7	1
LIVE PENNATE DIATOMS	292	228	196	64	47	74
ACHNANTHES AFFINIS	179	138	116	182	94	93
ACHNANTHES LANCEOLATA VAR. DU	176	144	164	146	172	191
ACHNANTHES LANCEOLATA	0	0	0	0	4	0
ACHNANTHES LINEARIS	0	0	0	2	0	0
ACHNANTHES MICROCEPHALA	3	5	1	1	5	0
ACHNANTHES MINUTISSIMA	15	18	11	25	14	86
AMPHORA OVALIS VAR. AFFINIS	0	0	0	0	1	0
AMPHORA PERPUSILLA	0	0	0	0	2	0
AMPHORA VENETA	1	0	0	0	0	0
ASTERIONELLA FORMOSA	0	0	0	0	1	0
CALONEIS VENTRICOSA	0	0	0	1	0	0
COCCONEIS PLACENTULA	0	2	0	0	0	0
CYMBELLA CYMBIFORMIS VAR. NON	0	0	0	0	1	0
CYMBELLA MICROCEPHALA	0	0	0	0	3	0
CYMBELLA MINUTA	0	0	0	0	3	0
CYMBELLA MINUTA VAR. SILESIAC	0	0	8	0	5	0
DIATOMA HIEMALE VAR. MESODON	0	0	0	0	38	0
EPHITHEMIA SOREX	0	0	0	1	0	0
FRAGILARIA CAPUCINA	0	0	0	0	2	1
FRAGILARIA VAUCHERIAE	0	2	4	1	10	0
GOMPHONEMA ANGUSTATUM	0	1	7	0	0	2
GOMPHONEMA OLIVACIUM	0	0	0	0	0	1
GOMPHONEMA PARVULUM	5	0	2	0	2	0
HANTZSCHIA AMPHIOXYS	1	0	2	0	0	0
HANNAEA ARCUS	0	0	0	0	10	0
MERIDION CIRCULARE	6	0	2	0	3	2
NAVICULA ARVENSIS	8	0	7	1	2	0
NAVICULA ARVENSIS	0	0	0	0	1	1
NAVICULA AURICULATA	1	11	3	0	3	0
NAVICULA CRYPTOCEPHALA VAR. V	2	2	1	2	1	6
NAVICULA LUZONENSIS	0	0	0	0	1	0
NAVICULA MINIMA	6	1	4	2	0	1
NAVICULA NOTHA	5	0	4	0	0	2
NAVICULA PELLICULOSA	44	131	46	102	80	75
NAVICULA PUPULA VAR. CAPITATA	0	0	0	5	0	0
NAVICULA SECRETA VAR. APICULA	28	31	26	15	10	36
NAVICULA VIRIDULA VAR. AVENAC	5	0	3	0	8	0
NITZSCHIA ACICULARIS	2	1	0	1	0	0

APPENDIX 4-2.1 • PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= CG-1
SAMPLING DATE= 26APR82

TAXONOMIC NAME	NUMBER OBSERVED REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
NITZSCHIA APICULATA	0	0	2	0	0	0
NITZSCHIA COMMUNIS	0	1	8	0	0	0
NITZSCHIA DENTICULA	0	1	0	0	0	0
NITZSCHIA DISSIPATA	0	2	0	0	6	0
NITZSCHIA FONTICOLA	0	0	8	0	0	0
NITZSCHIA FRUSTULUM	11	3	31	1	4	2
NITZSCHIA HOLSTATICA	8	0	0	0	0	0
NITZSCHIA HUNGARICA	4	0	0	0	0	0
NITZSCHIA LINEARIS	0	2	4	4	4	2
NITZSCHIA PALEA	17	3	16	8	4	2
NITZSCHIA ROMANA	0	0	2	0	0	0
NITZSCHIA SPECIES	0	0	0	1	0	0
RHOPALODIA MUSCULUS	0	1	0	0	0	0
SURIRELLA OVALIS	0	0	4	0	0	0
SURIRELLA OVATA	0	0	16	0	2	0
SYNSDRA FASCICULATA	4	0	2	0	0	0
SYNEDRA MINUSCULA	4	0	0	0	0	1
PHORMIDIUM SPECIES	147	1	83	316	34	79
STIGEOCLONIUM TENUE	4	0	2	18	0	3
TOTAL COUNT	1004	755	806	914	594	662

SEDGWICK - RAFTER COUNT AND CALCULATION DATA
SAMPLE VOLUME= 210
DILUTION FACTOR= 250
LENGTH OF S/R STRIP= 50
WIDTH OF S/R STRIP= 8
DEPTH OF S/R STRIP= 1
NUMBER OF S/R STRIPS COUNTED= 4
AREA OF SUBSTRATE SAMPLED= 5000

APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= YC-1
SAMPLING DATE= 26APR82

TAXONOMIC NAME	NUMBER OBSERVED REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
ANABAENA SPECIES	0	0	3	0	0	0
CYCLOTELLA MENEGHINIANA	1	1	3	2	5	1
THALASSIOSIRA FLUVIATILIS	1	2	0	0	2	2
DACTYLOCOCCOPSIS RAPHIDIOIDES	0	0	0	1	0	0
DEAD CENTRIC DIATOMS	3	1	1	6	0	1
DEAD PENNATE DIATOMS	351	204	378	412	74	48
LIVE CENTRIC DIATOMS	24	17	7	34	4	4
LIVE PENNATE DIATOMS	3283	2034	2642	4282	682	835
MICROSPORA SPECIES	0	0	0	6	0	0
ACHNANTHES AFFINIS	39	34	71	53	112	138
ACHNANTHES LANCEOLATA VAR. DU	32	22	8	8	9	0
ACHNANTHES EXIGUA	0	0	0	0	0	1
ACHNANTHES LANCEOLATA	2	0	0	1	4	5
ACHNANTHES MINUTISSIMA	0	0	0	2	2	14
AMPHORA OVALIS	5	0	0	0	0	0
AMPHORA PERPUSILLA	0	0	0	0	2	0
COCCONEIS PLACENTULA	2	4	0	0	3	1
CYMBELLA MICROCEPHALA	0	0	0	1	0	1
CYMBELLA MINUTA VAR. SILESIAC	1	1	0	0	0	0
DIATOMA TENUE VAR. ELONGATUM	0	0	0	0	2	0
FRAGILARIA CAPUCINA	1	1	1	3	0	0
FRAGILARIA VAUCHERIAE	7	3	9	4	13	11
GOMPHONEMA ANGUSTATUM	7	6	16	13	2	3
GOMPHONEMA OLIVACIUM	1	1	3	1	0	0
GOMPHONEMA SUBCLAVATUM	0	0	1	0	0	1
GYROSIGMA SPENCERII	1	0	0	0	0	0
HANTZSCHIA AMPHIOXYS	0	0	1	1	1	0
PINNULARIA MAJOR	0	1	0	0	0	0
NAVICULA ARVENSIS	7	3	0	0	1	1
NAVICULA CRYPTOCEPHALA VAR. V	10	6	3	5	10	1
NAVICULA HEUFLERI	3	1	2	3	1	0
NAVICULA LANCEOLATA	1	0	0	0	0	0
NAVICULA MINIMA	0	0	2	0	0	0
NAVICULA MUTICA	1	2	0	4	0	0
NAVICULA NOTHA	4	3	2	5	1	0
NAVICULA PELLICULOSA	24	74	145	78	221	288
NAVICULA SECRETA VAR. APICULA	0	33	11	5	24	4
NAVICULA TRIPUNCTATA VAR. SCH	2MOI	0	0	2	0	0
NAVICULA VIRIDULA VAR. AVENAC	67	15	23	20	3	3
NAVICULA VIRIDULA V. ROSTELLA	0	0	0	0	0	1
NITZSCHIA COMMUNIS	2	7	10	4	12	4
NITZSCHIA FONTICOLA	15	19	6	20	0	0
NITZSCHIA FRUSTULUM	102	91	100	154	23	12
NITZSCHIA HOLSTATICA	65	88	36	63	4	0
NITZSCHIA HUNGARICA	15	11	6	7	8	1
NITZSCHIA LATENS	1	0	0	2	0	0

APPENDIX 4-2.1 • PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= YC-1
SAMPLING DATE= 26APR82

TAXONOMIC NAME	NUMBER OBSERVED REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
NITZSCHIA LINEARIS	1	0	0	0	2	0
NITZSCHIA PALEA	27	30	26	24	12	2
NITZSCHIA ROMANA	0	1	0	0	0	2
RHOPALODIA MUSCULUS	0	1	0	0	0	0
SURIRELLA OVALIS	8	1	0	0	0	3
SURIRELLA OVATA	43	44	29	25	21	1
SYNSDRA FASCICULATA	0	1	0	0	1	0
SYNEDRA MINUSCULA	0	1	0	0	0	0
PHACUS SPECIES	0	0	0	1	0	0
PHORMIDIUM SPECIES	0	0	0	0	1	0
STIGEOCLONIUM TENUE	0	1	5	11	1	0
ULOTHRIX SPECIES	10	3	0	0	0	1
TOTAL COUNT	4169	2768	3550	5263	1263	1390

SEDGWICK - RAFTER COUNT AND CALCULATION DATA
SAMPLE VOLUME= 210
DILUTION FACTOR= 250
LENGTH OF S/R STRIP= 50
WIDTH OF S/R STRIP= 8
DEPTH OF S/R STRIP= 1
NUMBER OF S/R STRIPS COUNTED= 4
AREA OF SUBSTRATE SAMPLED= 5000

APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= YC-2
SAMPLING DATE= 26APR82

TAXONOMIC NAME	NUMBER OBSERVED REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
ANABAENA SPECIES	0	4	1	2	0	0
CYCLOTELLA MENEGHINIANA	0	6	11	0	1	0
DACTYLOCOCCOPSIS RAPHIDIOIDES	4	2	0	1	3	0
DEAD CENTRIC DIATOMS	0	1	1	0	0	1
DEAD PENNATE DIATOMS	40	139	121	198	160	220
LIVE CENTRIC DIATOMS	0	6	5	0	1	4
LIVE PENNATE DIATOMS	516	1231	1185	2233	1498	2230
ACHNANTHES AFFINIS	22	155	165	173	134	124
ACHNANTHES DEFLEXA	0	1	0	0	0	0
ACHNANTHES LANCEOLATA VAR. DU	6	17	7	18	4	2
ACHNANTHES HAUCKIANA VAR. ROS	3	0	5	1	2	0
ACHNANTHES LANCEOLATA	0	1	0	0	0	0
ACHNANTHES MICROCEPHALA	0	2	0	0	0	0
ACHNANTHES MINUTISSIMA	1	28	0	0	0	1
AMPHORA OVALIS	0	4	0	0	0	0
CALONEIS VENTRICOSA	1	1	0	0	0	0
COCCONEIS PLACENTULA	3	3	0	0	1	1
CYMBELLA MINUTA	0	2	0	0	0	0
CYMBELLA MINUTA VAR. SILESIAC	0	7	0	1	0	0
DENTICULA ELEGANS	0	0	1	0	0	0
DIATOMA TENUE VAR. ELONGATUM	3	0	0	0	0	0
ENTOMONEIS PALUDOSA	1	3	1	1	0	0
FRAGILARIA CAPUCINA	44	13	25	42	6	22
FRAGILARIA VAUCHERIAE	0	6	4	0	2	1
GOMPHONEMA ANGUSTATUM	0	1	1	3	2	1
GOMPHONEMA OLIVACIUM	0	1	24	21	5	7
GOMPHONEMA SUBCLAVATUM	1	0	0	1	1	0
GYROSIGMA SPENCERII	2	2	1	3	0	3
HANTZSCHIA AMPHIOXYS	0	2	0	1	0	1
HANNAEA ARCUS	0	7	0	0	0	0
PINNULARIA BREBISSONII	0	1	1	0	0	0
PINNULARIA MAJOR	0	1	0	1	0	0
NAVICULA ARVENSIS	6	6	20	13	61	92
NAVICULA CINCTA	0	0	0	0	1	0
NAVICULA CRYPTOCEPHALA VAR. V	7	5	9	7	4	5
NAVICULA HEUFLERI	3	2	2	0	1	0
NAVICULA LUZONENSIS	0	0	0	0	0	1
NAVICULA MINIMA	0	1	0	2	1	2
NAVICULA MUTICA	0	1	0	0	1	0
NAVICULA NOTHA	6	10	1	4	4	1
NAVICULA PELLICULOSA	204	25	39	56	170	62
NAVICULA SECRETA VAR. APICULA	4	8	1	3	4	1
NAVICULA TRIPUNCTATA VAR. SCH	2MOI	0	1	1	0	0
NAVICULA VIRIDULA VAR. AVENAC	2	7	2	1	0	0
NITZSCHIA ACICULARIS	2	0	1	0	0	0
NITZSCHIA COMMUNIS	1	2	1	1	2	4

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APPENDIX 4-2.1  . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

------------------------------------------------------------------------------------
                                                NUMBER OBSERVED
TAXONOMIC NAME                      REP #1  REP #2  REP #3  REP #4  REP #5  REP #6
------------------------------------------------------------------------------------
STATION= YC-2
SAMPLING DATE= 26APR82


NITZSCHIA DENTICULA                    0       1       0       0       0       0
NITZSCHIA FONTICOLA                    7       7       8       7       0      15
NITZSCHIA FRUSTULUM                   41      97      40      38      32      41
NITZSCHIA HOLSTATICA                  97      15     111      70      51      82
NITZSCHIA HUNGARICA                    0       1       0       4       0       0
NITZSCHIA LINEARIS                     1       0       0       0       0       0
NITZSCHIA PALEA                       10      35      25      14       7      53
NITZSCHIA ROMANA                       1       1       1       0       0       4
NITSCHIA TRYBLIONELLA VAR. LE      OSIS       4       0       0       0       0
RHOICOSPHENIA CURVATA                  4       5       3       1       0       0
RHOPALODIA GIBBA                       4       5       3       3       0       0
RHOPALODIA MUSCULUS                    0       1       0       0       0       1
SURIRELLA OVALIS                       1       1       0       1       0       1
SURIRELLA OVATA                       11       4       0       8       1       8
SYNEDRA MINUSCULA                      1       3       0       2       0       0
SYNEDRA ULNA                           1       0       0       0       2       0
STIGEOCLONIUM TENUE                   73     964     585      81      75       0
------------------------------------------------------------------------------------
TOTAL COUNT                         1136    2858    2412    3017    2237    2991

------------------------------------------------------------------------------------
SEDGWICK - RAFTER COUNT AND CALCULATION DATA
SAMPLE VOLUME=  210
DILUTION FACTOR=  200
LENGTH OF S/R STRIP=   50
WIDTH OF S/R STRIP=    8
DEPTH OF S/R STRIP=    1
NUMBER OF S/R STRIPS COUNTED=  4
AREA OF SUBSTRATE SAMPLED= 5000
------------------------------------------------------------------------------------
```

APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= YC-3
SAMPLING DATE= 27APR82

TAXONOMIC NAME	NUMBER OBSERVED REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
BULBOCHAETA SPECIES	4	9	172	4	859	0
CYCLOTELLA MENEGHINIANA	0	1	8	0	3	1
DEAD CENTRIC DIATOMS	0	2	0	0	1	0
DEAD PENNATE DIATOMS	150	20	199	32	767	7
LIVE CENTRIC DIATOMS	0	13	5	0	3	2
LIVE PENNATE DIATOMS	2179	369	1461	389	5790	152
OSCILLATORIA SPECIES	0	0	3	0	1	0
ACHNANTHES AFFINIS	21	10	247	47	312	4
ACHNANTHES LANCEOLATA VAR. DU	1	3	1	13	0	0
ACHNANTHES LANCEOLATA	0	0	0	0	2	0
COCCONEIS PLACENTULA	0	0	0	0	0	1
CYMBELLA MINUTA VAR. SILESIAC	0	2	9	0	3	0
DIATOMA TENUE VAR. ELONGATUM	1	0	0	0	0	1
DIATOMA VULGARE	0	0	0	0	0	4
ENTOMONEIS PALUDOSA	1	0	0	0	0	0
ENTOMONEIS PALUDOSA	0	0	0	1	2	0
FRAGILARIA CAPUCINA	0	14	0	16	0	0
FRAGILARIA VAUCHERIAE	20	66	9	52	11	21
GOMPHONEMA ANGUSTATUM	0	2	0	3	0	0
GOMPHONEMA GRACILE	6	3	0	2	0	0
GOMPHONEMA OLIVACIUM	0	6	0	8	0	0
GOMPHONEMA PARVULUM	0	0	0	1	0	0
GYROSIGMA SPENCERII	1	1	1	0	0	0
HANNAEA ARCUS	0	1	0	0	0	0
MASTOGLOIA ELLIPTICA	0	0	2	0	0	0
NAVICULA ARVENSIS	5	1	0	0	1	0
NAVICULA ATOMUS	0	30	9	11	2	82
NAVICULA CINCTA VAR. ROSTRATA	1	0	5	1	2	0
NAVICULA CRYPTOCEPHALA VAR. V	0	0	1	1	1	0
NAVICULA HALOPHILA	0	0	1	0	14	0
NAVICULA HEUFLERI	0	0	1	0	1	0
NAVICULA PELLICULOSA	180	263	65	226	20	198
NAVICULA SALINARUM	2	0	2	4	1	0
NAVICULA SECRETA VAR. APICULA	1	4	2	1	1	1
NITZSCHIA COMMUNIS	0	0	5	0	0	0
NITZSCHIA FONTICOLA	1	0	0	0	0	0
NITZSCHIA FRUSTULUM	111	10	73	16	95	12
NITZSCHIA HUNGARICA	0	0	1	1	0	0
NITZSCHIA MICROCEPHALA	0	3	14	1	1	5
NITZSCHIA PALEA	3	11	11	14	15	7
NITZSCHIA ROMANA	0	0	1	0	0	0
NITZSCHIA SPECIES	0	0	4	0	0	0
RHOPALODIA MUSCULUS	0	0	2	0	0	0
SURIRELLA OVALIS	41	8	10	7	2	16
SURIRELLA OVATA	114	60	17	74	17	146
SYNSDRA FASCICULATA	0	0	0	0	0	1

APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

TAXONOMIC NAME	NUMBER OBSERVED REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
STATION= YC-3 SAMPLING DATE= 27APR82						
SYNEDRA PULCHELLA VAR. LANCEO	0	3	3	0	0	0
TOTAL COUNT	2843	915	2344	925	7927	661

SEDGWICK - RAFTER COUNT AND CALCULATION DATA
SAMPLE VOLUME= 210
DILUTION FACTOR= 250
LENGTH OF S/R STRIP= 50
WIDTH OF S/R STRIP= 8
DEPTH OF S/R STRIP= 1
NUMBER OF S/R STRIPS COUNTED= 4
AREA OF SUBSTRATE SAMPLED= 5000

APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= CG-1
SAMPLING DATE= 20JUL82

	NUMBER OBSERVED					
TAXONOMIC NAME	REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
ANABAENA SPECIES	4	1	0	0	0	270
BATRACHOSPERMUM SPECIES	137	37	0	22	28	149
CYCLOTELLA MENEGHINIANA	0	0	2	0	0	1
CYLINDROTHECA GRACILIS	0	1	0	1	0	0
DEAD PENNATE DIATOMS	126	52	19	24	78	211
ENTEROMORPHA SPECIES	0	70	0	486	0	13
LIVE CENTRIC DIATOMS	0	0	1	0	0	1
LIVE PENNATE DIATOMS	605	213	158	236	420	1541
MICROSPORA SPECIES	42	0	0	0	0	0
MOUGEOTIA SPECIES	0	0	0	0	0	3
OSCILLATORIA SPECIES	0	0	0	0	0	3
ACHNANTHES AFFINIS	220	44	194	192	235	305
ACHNANTHES LANCEOLATA VAR. DU	12	2	6	15	2	1
ACHNANTHES HAUCKIANA VAR. ROS	1	0	0	0	0	0
ACHNANTHES MICROCEPHALA	0	0	2	0	0	0
ACHNANTHES MINUTISSIMA	0	10	20	6	10	0
AMPHORA OVALIS	0	0	0	0	2	0
AMPHORA PERPUSILLA	2	0	0	0	0	0
AMPHORA VENETA	0	3	5	14	4	1
CALONEIS AMHISBAENA	0	0	1	0	0	0
CALONEIS VENTRICOSA	1	2	4	3	0	0
CYMBELLA MINUTA	0	0	0	11	1	0
CYMBELLA MINUTA VAR. SILESIAC	11	8	3	1	1	15
EUNOTIA PECTINALIS	0	1	0	0	0	0
FRAGILARIA CAPUCINA	3	0	0	4	3	1
FRAGILARIA VAUCHERIAE	12	8	6	45	6	30
GOMPHONEMA ANGUSTATUM	1	0	0	2	0	4
GOMPHONEMA OLIVACIUM	0	1	0	0	1	0
GOMPHONEMA SUBCLAVATUM	0	0	1	1	0	3
GYROSIGMA SPENCERII	0	0	2	2	1	0
HANTZSCHIA AMPHIOXYS	2	0	0	1	1	0
PINNULARIA BREBISSONII	1	2	0	0	0	0
PLEUROSIGMA DELICATULUM	0	0	1	1	1	0
MERIDION CIRCULARE	0	0	0	0	1	0
NAVICULA ARVENSIS	0	4	2	0	1	0
NAVICULA CRYPTOCEPHALA	0	0	7	0	3	0
NAVICULA CINCTA	0	2	1	1	6	0
NAVICULA CRYPTOCEPHALA VAR. V	10	6	0	10	3	5
NAVICULA ELGINENSIS	0	0	0	0	0	1
NAVICULA HALOPHILA	2	2	0	0	0	0
NAVICULA HEUFLERI	3	2	2	6	6	0
NAVICULA LANCEOLATA	0	0	0	2	0	0
NAVICULA LUZONENSIS	0	0	6	0	0	0
NAVICULA MENISCULUS	0	1	0	10	2	0
NAVICULA MINIMA	0	2	4	0	1	0
NAVICULA MUTICA	3	1	0	0	0	0

APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= CG-1
SAMPLING DATE= 20JUL82

TAXONOMIC NAME	NUMBER OBSERVED REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
NAVICULA NOTHA	2	0	1	0	1	0
NAVICULA PELLICULOSA	5	34	52	10	11	15
NAVICULA PUPULA	0	0	0	1	1	0
NAVICULA PYGMAEA	0	0	0	0	1	0
NAVICULA SECRETA VAR. APICULA	41	56	39	31	25	5
NAVICULA SPECIES	0	0	0	0	0	1
NAVICULA VIRIDULA	67	55	39	4	0	34
NITZSCHIA ACICULARIS	2	2	0	0	0	0
NITZSCHIA COMMUNIS	6	15	6	9	5	1
NITZSCHIA FRUSTULUM	51	28	12	41	116	20
NITZSCHIA HOLSTATICA	0	1	0	0	0	0
NITZSCHIA HUNGARICA	2	0	2	8	0	0
NITZSCHIA LINEARIS	17	46	50	12	11	4
NITZSCHIA MICROCEPHALA	0	0	2	0	0	0
NITZSCHIA PALEA	14	32	14	34	21	40
NITZSCHIA PALEACEA	0	2	1	0	0	0
NITZSCHIA ROMANA	0	12	0	2	4	2
NITZSCHIA SPECIES	0	0	0	2	0	0
RHOPALODIA GIBBA	0	0	0	1	0	0
RHOPALODIA MUSCULUS	0	0	1	0	0	0
SURIRELLA ANGUSTATA	0	2	0	0	0	0
SURIRELLA LINEARIS	1	1	0	0	0	0
SURIRELLA OVALIS	1	7	0	12	5	0
SURIRELLA OVATA	16	15	3	5	0	0
SYNEDRA ACUS	0	0	0	2	0	0
SYNSDRA FASCICULATA	1	0	0	0	0	0
PHORMIDIUM SPECIES	22	36	7	13	0	270
SPIROGYRA SPECIES	1	0	4	0	5	0
ULOTHRIX ZONATA	153	0	0	0	0	0
VAUCHERIA SPECIES	27	0	0	0	0	0
TOTAL COUNT	1627	819	680	1283	1023	2950

SEDGWICK - RAFTER COUNT AND CALCULATION DATA
SAMPLE VOLUME= 210
DILUTION FACTOR= 25
LENGTH OF S/R STRIP= 50
WIDTH OF S/R STRIP= 0
DEPTH OF S/R STRIP= 1
NUMBER OF S/R STRIPS COUNTED= 4
AREA OF SUBSTRATE SAMPLED= 5000

APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= YC-2
SAMPLING DATE= 19JUL82

	NUMBER OBSERVED					
TAXONOMIC NAME	REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
ANABAENA SPECIES	1	40	10	0	72	27
BULBOCHAETA SPECIES	179	446	267	187	516	408
CYCLOTELLA MENEGHINIANA	78	36	26	66	16	15
THALASSIOSIRA FLUVIATILIS	40	22	14	7	8	0
DACTYLOCOCCOPSIS RAPHIDIOIDES	0	0	0	0	0	1
CLADOPHORA SPECIES	0	0	12	0	0	0
DEAD CENTRIC DIATOMS	4	5	10	4	16	6
DEAD PENNATE DIATOMS	19	73	72	61	79	96
LIVE CENTRIC DIATOMS	64	32	35	32	488	62
LIVE PENNATE DIATOMS	375	643	602	608	1715	603
MERISMOPEDIA SPECIES	0	0	0	0	0	4
OOCYSTIS SPECIES	0	0	0	1	0	0
OSCILLATORIA SPECIES	10	0	3	0	0	0
ACHNANTHES AFFINIS	3	8	7	5	14	8
ACHNANTHES LANCEOLATA VAR. DU	0	5	1	0	0	9
ACHNANTHES HAUCKIANA VAR. ROS	27	14	37	5	11	20
ACHNANTHES MICROCEPHALA	0	0	0	0	2	0
ACHNANTHES MINUTISSIMA	1	1	0	0	3	1
AMPHORA VENETA	0	0	0	0	0	1
COCCONEIS PEDICULUS	1	1	0	1	0	1
COCCONEIS PLACENTULA	2	1	0	4	3	4
CYMBELLA MINUTA	0	0	11	0	0	0
CYMBELLA MINUTA VAR. SILESIAC	26	47	0	13	13	24
ENTOMONEIS PALUDOSA	2	1	0	5	2	0
EPITHEMIA TURGIDA	2	0	0	1	0	0
FRAGILARIA CAPUCINA	0	3	1	2	2	0
FRAGILARIA PINNATA	0	0	0	1	0	0
GOMPHONEMA ANGUSTATUM	1	0	0	0	0	0
GOMPHONEMA SUBCLAVATUM	2	1	0	0	0	0
GYROSIGMA SPENCERII	0	12	0	0	0	0
PINNULARIA BREBISSONII	4	0	0	0	0	0
PLEUROSIGMA DELICATULUM	19	20	22	42	5	32
NAVICULA ARVENSIS	0	1	2	0	0	3
NAVICULA CRYPTOCEPHALA	0	1	0	1	0	0
NAVICULA CINCTA	0	0	0	2	0	0
NAVICULA CRYPTOCEPHALA VAR. V	3	2	8	8	0	8
NAVICULA HALOPHILA	0	1	0	2	0	3
NAVICULA HEUFLERI	0	2	0	1	0	0
NAVICULA LANCEOLATA	0	0	0	1	0	0
NAVICULA MINIMA	0	0	1	0	0	0
NAVICULA NOTHA	0	0	0	1	0	1
NAVICULA PELLICULOSA	0	0	0	0	0	3
NAVICULA TRIPUNCTATA VAR. SCH	0MOI	0	0	0	0	1
NAVICULA VIRIDULA VAR. AVENAC	0	2	0	4	0	0
NAVICULA VIRIDULA	0	0	2	0	0	0
NAVICULA VIRIDULA VAR. VIRIDU	0	1	0	2	0	5

APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= YC-2
SAMPLING DATE= 19JUL82

TAXONOMIC NAME	NUMBER OBSERVED REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
NITZSCHIA ACICULARIS	8	3	3	2	0	1
NITZSCHIA COMMUNIS	5	2	10	4	0	5
NITZSCHIA DENTICULA	1	0	0	0	0	0
NITZSCHIA FRUSTULUM	120	105	192	120	243	188
NITZSCHIA GRACILIS	10	2	13	15	7	0
NITZSCHIA HOLSTATICA	2	2	4	8	0	0
NITZSCHIA HUNGARICA	1	1	0	1	2	7
NITZSCHIA INCONSPICUA	50	65	55	67	77	93
NITZSCHIA LINEARIS	2	5	1	0	2	0
NITZSCHIA MICROCEPHALA	27	40	28	25	28	22
NITZSCHIA PALEA	24	31	40	77	50	27
NITZSCHIA PALEACEA	1	0	0	0	0	0
NITZSCHIA ROMANA	10	6	2	1	2	5
NITSCHIA TRYBLIONELLA VAR. LE	2SIS	0	0	0	0	0
RHOICOSPHENIA CURVATA	0	0	2	0	0	2
RHOPALODIA GIBBA	5	22	8	3	1	5
RHOPALODIA MUSCULUS	6	10	1	0	0	0
RHOPALODIA MUSCULUS	0	0	0	0	0	2
SURIRELLA OVALIS	0	1	0	0	0	0
SYNEDRA ACUS	1	0	0	0	0	0
SYNSDRA FASCICULATA	1	3	2	3	0	5
SYNEDRA PULCHELLA VAR. LANCEO	4	9	0	7	1	0
SYNEDRA ULNA VAR. CONTRACTA	16	13	7	0	6	0
SYNEDRA ULNA	4	0	1	0	0	4
SYNEDRA ULNA VAR. ULNA	0	1	0	2	1	0
PHORMIDIUM SPECIES	0	0	1	0	0	0
RHIZOCLONIUM SPECIES	40	65	0	0	0	0
SCENEDESMUS SPECIES	0	0	0	0	4	0
STIGEOCLONIUM TENUE	10	7	31	0	304	1
TOTAL COUNT	1213	1814	1544	1402	3693	1713

SEDGWICK - RAFTER COUNT AND CALCULATION DATA
SAMPLE VOLUME= 210
DILUTION FACTOR= 100
LENGTH OF S/R STRIP= 50
WIDTH OF S/R STRIP= 1
DEPTH OF S/R STRIP= 1
NUMBER OF S/R STRIPS COUNTED= 4
AREA OF SUBSTRATE SAMPLED= 5000

APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= YC-3
SAMPLING DATE= 20JUL82

	NUMBER OBSERVED					
TAXONOMIC NAME	REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
ANABAENA SPECIES	2	13	11	19	12	0
BULBOCHAETA SPECIES	984	941	681	532	812	387
CYCLOTELLA MENEGHINIANA	113	58	80	134	84	72
THALASSIOSIRA FLUVIATILIS	13	0	0	0	0	0
DEAD CENTRIC DIATOMS	2	12	2	7	6	0
DEAD PENNATE DIATOMS	6	120	15	12	24	38
LIVE CENTRIC DIATOMS	40	137	22	55	8	26
LIVE PENNATE DIATOMS	124	1413	146	197	201	211
ACHNANTHES AFFINIS	5	3	8	2	29	3
ACHNANTHES LANCEOLATA VAR. DU	2	1	0	11	14	22
ACHNANTHES HAUCKIANA VAR. ROS	6	34	43	17	0	0
ACHNANTHES LANCEOLATA	0	0	4	0	2	2
ACHNANTHES MINUTISSIMA	0	1	5	0	8	3
CYMBELLA AFFINIS	0	0	0	0	5	3
CYMBELLA MINUTA	0	6	11	0	0	0
CYMBELLA MINUTA VAR. SILESIAC	34	3	5	27	2	4
ENTOMONEIS PALUDOSA	2	4	7	8	4	6
FRAGILARIA VAUCHERIAE	2	1	15	1	9	5
GOMPHONEMA ANGUSTATUM	1	0	0	0	2	1
GOMPHONEMA CLEVEI	0	0	0	0	1	0
GOMPHONEMA OLIVACIUM	1	0	0	0	0	0
GOMPHONEMA SUBCLAVATUM	0	0	0	0	1	5
COMPHONEMA TRUNCATUM	0	1	0	0	0	0
GYROSIGMA SPENCERII	0	1	0	0	1	0
HANTZSCHIA AMPHIOXYS	0	2	0	0	2	0
PLEUROSIGMA DELICATULUM	0	2	1	0	0	0
NAVICULA ARVENSIS	0	0	0	0	0	2
NAVICULA CRYPTOCEPHALA	0	0	1	0	0	0
NAVICULA CINCTA	2	2	0	1	0	0
NAVICULA CRYPTOCEPHALA VAR CR	0EPH	0	0	2	0	0
NAVICULA CUSPIDATA	0	0	0	1	0	0
NAVICULA CRYPTOCEPHALA VAR. V	48	9	22	32	19	19
NAVICULA HALOPHILA	14	2	5	7	3	3
NAVICULA HEUFLERI	0	1	0	3	7	1
NAVICULA MINIMA	4	0	0	1	0	0
NAVICULA MENISCULUS VAR. UPSA	0IS	0	0	1	0	1
NAVICULA MINUSCULA	11	0	3	0	0	0
NAVICULA MUTICA	0	0	1	0	0	0
NAVICULA NOTHA	0	0	0	4	12	2
NAVICULA PELLICULOSA	0	9	1	2	10	4
NAVICULA PYGMAEA	0	0	0	0	1	0
NAVICULA SALINARUM	0	13	1	0	0	0
NAVICULA SECRETA VAR. APICULA	2	2	3	2	1	2
NAVICULA TRIPUNCTATA VAR. SCH	0MOI	0	2	0	3	2
NAVICULA VIRIDULA VAR. AVENAC	0	0	3	0	0	2
NAVICULA VIRIDULA VAR. VIRIDU	0	1	1	0	3	2

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APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

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                                                 NUMBER OBSERVED
TAXONOMIC NAME                   REP #1   REP #2   REP #3   REP #4   REP #5   REP #6
-------------------------------------------------------------------------------------
STATION= YC-3
SAMPLING DATE= 20JUL82


NITZSCHIA COMMUNIS                  30       13       25       31       21       12
NITZSCHIA FRUSTULUM                105      116       86       73       94      138
NITZSCHIA HOLSTATICA                 0       21        5        0       15       38
NITZSCHIA HUNGARICA                  4        3       20        6        4        3
NITZSCHIA IGNORATA                   0        0        1        0        0        0
NITZSCHIA INCONSPICUA               21       36       51       64       73       51
NITZSCHIA LATENS                     2        0        0        0        0        0
NITZSCHIA LINEARIS                   4        1        2        2        0        0
NITZSCHIA MICROCEPHALA               1       12        3        0        5        7
NITZSCHIA PALEA                     18       23       21       23       28       54
NITZSCHIA PALEACEA                   0        0        0        1        0       11
NITZSCHIA ROMANA                     5        2        0        5        3        2
NITZSCHIA SPECIES                    0        4        1        0        0        0
RHOPALODIA GIBBA                     1        1        0        0        0        3
RHOPALODIA MUSCULUS                 11        0        6        6        2        5
SURIRELLA LINEARIS                   1        2        0        1        0        0
SURIRELLA OVALIS                    25       10       20       21       16       15
SURIRELLA OVATA                      0        1        6        2        3        0
SYNEDRA PULCHELLA VAR. LANCEO       12      104       28       13       13        3
SYNEDRA ULNA                         0        0        0        1        0        0
SPIROGYRA SPECIES                    0       12       31        0        0        0
STIGEOCLONIUM TENUE                  2        0        0        0        0        0
-------------------------------------------------------------------------------------
TOTAL COUNT                       1660     3153     1405     1327     1563     1170

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SEDGWICK - RAFTER COUNT AND CALCULATION DATA
SAMPLE VOLUME=  210
DILUTION FACTOR=  100
LENGTH OF S/R STRIP=    50
WIDTH OF S/R STRIP=      1
DEPTH OF S/R STRIP=      1
NUMBER OF S/R STRIPS COUNTED=  4
AREA OF SUBSTRATE SAMPLED= 5000
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APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= CG-1
SAMPLING DATE= 05OCT82

	NUMBER OBSERVED					
TAXONOMIC NAME	REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
ANABAENA SPECIES	0	0	1	0	0	0
BATRACHOSPERMUM SPECIES	159	43	0	1	13	0
CYCLOTELLA MENEGHINIANA	11	20	2	1	0	0
CLADOPHORA GLOMERATA	0	0	83	0	0	0
DEAD PENNATE DIATOMS	17	3	35	3	9	1
LIVE CENTRIC DIATOMS	6	4	3	4	0	0
LIVE PENNATE DIATOMS	192	90	285	59	109	64
ACHNANTHES AFFINIS	65	73	63	83	33	103
ACHNANTHES LANCEOLATA VAR. DU	6	6	52	5	54	1
ACHNANTHES MINUTISSIMA	277	76	134	146	256	195
AMPHORA PERPUSILLA	0	0	0	0	0	2
CYMBELLA CYMBIFORMIS VAR. NON	0ATA	2	0	0	0	0
CYMBELLA MINUTA	0	0	0	1	0	0
CYMBELLA MINUTA VAR. SILESIAC	0	6	1	0	0	0
DIATOMA VULGARE	0	0	0	1	0	0
FRAGILARIA VAUCHERIAE	0	1	1	0	0	0
GOMPHONEMA ANGUSTATUM	2	5	0	1	0	0
GOMPHONEMA PARVULUM	0	1	0	0	0	0
GYROSIGMA SPENCERII	0	0	0	1	0	0
NAVICULA AURICULATA	1	2	0	0	0	0
NAVICULA CINCTA	0	0	2	1	0	0
NAVICULA CRYPTOCEPHALA VAR. V	45	13	81	25	27	7
NAVICULA HALOPHILA	0	14	3	7	0	0
NAVICULA HEUFLERI	0	1	1	4	0	0
NAVICULA MINIMA	0	2	0	0	0	0
NAVICULA MINUSCULA	0	256	20	196	127	186
NAVICULA NOTHA	0	2	0	0	2	0
NAVICULA SECRETA VAR. APICULA	36	14	135	13	25	3
NAVICULA VIRIDULA	0	9	5	2	0	0
NITZSCHIA ACICULARIS	0	0	0	1	0	0
NITZSCHIA COMMUNIS	1	1	0	0	0	0
NITZSCHIA DENTICULA	1	0	0	0	0	0
NITZSCHIA FRUSTULUM	46	20	5	10	10	4
NITZSCHIA HUNGARICA	0	0	0	0	0	1
NITZSCHIA LINEARIS	0	0	1	0	2	0
NITZSCHIA PALEA	3	5	1	2	3	4
NITZSCHIA SPECIES	0	1	1	0	0	0
RHOPALODIA GIBBA	6	1	0	0	0	0
RHOPALODIA MUSCULUS	1	0	0	0	0	0
SURIRELLA OVALIS	1	1	0	1	0	0
SURIRELLA OVATA	1	0	0	0	0	0
SYNEDRA ACUS	2	0	3	0	0	0
SYNEDRA PULCHELLA VAR. LANCEO	0	1	0	0	0	0
SYNSDRA FASCICULATA	0	0	2	0	0	0
SYNEDRA MINUSCULA	0	0	1	0	0	3
PHORMIDIUM SPECIES	17	10	57	2	0	7

APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

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------------------------------------------------------------------------------
                                               NUMBER OBSERVED
TAXONOMIC NAME                 REP #1   REP #2   REP #3   REP #4   REP #5   REP #6
------------------------------------------------------------------------------
STATION= CG-1
SAMPLING DATE= 05OCT82


SPIROGYRA SPECIES                  0        3       19        0        0        0
ULOTHRIX ZONATA                    0        0        2        0        0        0
------------------------------------------------------------------------------
TOTAL COUNT                      896      686      999      570      670      581

------------------------------------------------------------------------------
SEDGWICK - RAFTER COUNT AND CALCULATION DATA
SAMPLE VOLUME=  210
DILUTION FACTOR=  100
LENGTH OF S/R STRIP=   50
WIDTH OF S/R STRIP=    1
DEPTH OF S/R STRIP=    1
NUMBER OF S/R STRIPS COUNTED=  4
AREA OF SUBSTRATE SAMPLED= 5000
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APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= YC-1
SAMPLING DATE= 05OCT82

TAXONOMIC NAME	NUMBER OBSERVED REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
ANABAENA SPECIES	2	0	0	0	2	0
BATRACHOSPERMUM SPECIES	0	8	4	3	0	3
BULBOCHAETA SPECIES	0	0	0	0	4	0
CYCLOTELLA MENEGHINIANA	6	6	5	3	2	6
CLADOPHORA GLOMERATA	0	0	0	15	2	1
DEAD CENTRIC DIATOMS	4	1	1	0	0	0
DEAD PENNATE DIATOMS	13	6	28	35	31	4
LIVE CENTRIC DIATOMS	9	10	5	3	1	6
LIVE PENNATE DIATOMS	738	190	354	628	531	105
ACHNANTHES AFFINIS	8	3	3	4	3	6
ACHNANTHES LANCEOLATA VAR. DU	8	14	12	10	11	14
ACHNANTHES HAUCKIANA VAR. ROS	0	0	0	0	0	11
ACHNANTHES MINUTISSIMA	1	3	0	0	1	4
CALONEIS AMHISBAENA	0	0	0	0	0	1
CALONEIS VENTRICOSA	0	0	0	0	2	0
COCCONEIS PLACENTULA	1	10	0	1	0	12
CYMBELLA MINUTA	0	0	0	0	0	1
DIATOMA TENUE VAR. ELONGATUM	0	0	0	0	1	0
ENTOMONEIS PALUDOSA	0	0	0	0	1	1
FRAGILARIA CAPUCINA	8	92	19	22	146	54
FRAGILARIA VAUCHERIAE	0	2	1	1	0	0
GOMPHONEMA ANGUSTATUM	1	25	10	3	17	10
GOMPHONEMA GRACILE	2	0	0	0	0	2
GOMPHONEMA PARVULUM	0	0	0	0	0	1
GYROSIGMA SPENCERII	0	2	1	2	2	3
HANTZSCHIA AMPHIOXYS	0	0	0	0	2	0
PINNULARIA BREBISSONII	0	0	1	0	0	2
NAVICULA ARVENSIS	0	0	0	0	0	1
NAVICULA CRYPTOCEPHALA	0	0	0	0	4	0
NAVICULA CINCTA	0	1	1	1	0	0
NAVICULA CRYPTOCEPHALA VAR. V	1	1	1	0	1	1
NAVICULA HALOPHILA	1	0	0	1	3	4
NAVICULA HEUFLERI	0	1	1	1	3	5
NAVICULA MINIMA	0	0	0	0	1	3
NAVICULA MUTICA	0	0	1	0	0	0
NAVICULA NOTHA	0	6	3	0	1	5
NAVICULA PELLICULOSA	0	0	0	11	0	0
NAVICULA SECRETA VAR. APICULA	0	0	0	0	1	0
NAVICULA TRIPUNCTATA VAR. SCH	0MOI	0	1	0	0	0
NAVICULA VIRIDULA	1	2	0	0	0	0
NITZSCHIA COMMUNIS	2	1	12	11	1	9
NITZSCHIA DENTICULA	0	2	1	0	0	1
NITZSCHIA FRUSTULUM	267	199	337	275	102	180
NITZSCHIA HUNGARICA	20	6	6	3	7	19
NITZSCHIA IGNORATA	0	0	0	0	1	0
NITZSCHIA INCONSPICUA	3	14	14	72	51	14

APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

TAXONOMIC NAME	NUMBER OBSERVED REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
STATION= YC-1 SAMPLING DATE= 05OCT82						
NITZSCHIA LINEARIS	1	2	0	0	3	4
NITZSCHIA MICROCEPHALA	124	74	81	70	83	51
NITZSCHIA PALEA	28	24	83	31	32	48
NITZSCHIA ROMANA	0	3	0	0	0	3
RHOPALODIA GIBBA	4	9	1	0	0	8
RHOPALODIA MUSCULUS	5	5	0	3	5	5
SURIRELLA LINEARIS	3	0	0	1	4	0
SURIRELLA OVALIS	0	0	0	0	1	1
SURIRELLA OVATA	3	0	1	0	0	0
SYNEDRA ACUS	1	0	0	0	1	2
SYNEDRA PULCHELLA VAR. LANCEO	2	3	0	0	5	1
SYNSDRA FASCICULATA	0	0	0	0	0	1
SYNEDRA MINUSCULA	0	0	0	0	0	11
SYNEDRA ULNA	0	0	1	0	0	0
PHORMIDIUM SPECIES	1	3	0	0	0	3
SPIROGYRA SPECIES	4	0	0	0	0	0
TOTAL COUNT	1272	728	989	1210	1069	627

SEDGWICK - RAFTER COUNT AND CALCULATION DATA
SAMPLE VOLUME= 210
DILUTION FACTOR= 150
LENGTH OF S/R STRIP= 50
WIDTH OF S/R STRIP= 1
DEPTH OF S/R STRIP= 1
NUMBER OF S/R STRIPS COUNTED= 4
AREA OF SUBSTRATE SAMPLED= 5000

APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= YC-2
SAMPLING DATE= 04OCT82

	NUMBER OBSERVED					
TAXONOMIC NAME	REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
ANABAENA SPECIES	0	4	1	1	4	0
BULBOCHAETA SPECIES	625	376	843	437	502	423
CYCLOTELLA MENEGHINIANA	6	9	1	2	0	3
THALASSIOSIRA FLUVIATILIS	32	20	21	6	16	26
DEAD CENTRIC DIATOMS	1	0	4	6	1	4
DEAD PENNATE DIATOMS	22	16	19	7	5	10
LIVE CENTRIC DIATOMS	15	4	13	12	10	7
LIVE PENNATE DIATOMS	147	203	208	123	104	124
LYNGBYA SPECIES	0	0	1	0	0	0
MERISMOPEDIA SPECIES	0	2	0	0	0	0
OSCILLATORIA SPECIES	0	0	3	0	0	0
ACHNANTHES AFFINIS	0	0	4	11	4	0
ACHNANTHES LANCEOLATA VAR. DU	0	4	6	12	0	18
ACHNANTHES HAUCKIANA VAR. ROS	34	61	39	18	39	88
ACHNANTHES MINUTISSIMA	11	3	0	5	12	7
AMPHORA OVALIS	0	0	0	0	0	1
COCCONEIS PEDICULUS	0	0	0	0	0	2
COCCONEIS PLACENTULA	0	10	6	10	9	11
CYMBELLA MINUTA VAR. SILESIAC	6	14	29	8	14	26
ENTOMONEIS PALUDOSA	0	0	0	0	2	0
FRAGILARIA CAPUCINA	0	2	0	1	1	2
FRAGILARIA VAUCHERIAE	0	0	0	0	1	1
GOMPHONEMA OLIVACIUM	0	0	0	1	0	0
GOMPHONEMA SUBCLAVATUM	0	0	0	1	1	0
GYROSIGMA SPENCERII	1	41	19	4	12	21
HANTZSCHIA AMPHIOXYS	0	1	1	0	0	0
PINNULARIA BREBISSONII	0	1	0	0	0	0
NAVICULA ARVENSIS	0	0	0	7	10	0
NAVICULA ATOMUS	0	1	0	0	0	0
NAVICULA CRYPTOCEPHALA VAR. V	0	4	0	1	0	1
NAVICULA HEUFLERI	2	4	6	5	6	0
NAVICULA LUZONENSIS	0	0	0	0	1	0
NAVICULA MINUSCULA	0	5	0	6	0	0
NAVICULA MUTICA	0	1	0	1	0	0
NAVICULA NOTHA	0	6	8	1	4	1
NAVICULA PELLICULOSA	0	0	3	0	0	0
NAVICULA PYGMAEA	0	0	0	1	0	0
NAVICULA SECRETA VAR. APICULA	0	1	5	5	3	0
NAVICULA VIRIDULA	0	2	1	0	8	3
NITZSCHIA COMMUNIS	0	1	5	1	1	0
NITZSCHIA FRUSTULUM	249	163	110	157	203	90
NITZSCHIA HUNGARICA	3	8	3	3	5	1
NITZSCHIA INCONSPICUA	65	28	46	43	15	30
NITZSCHIA LINEARIS	0	1	0	1	0	2
NITZSCHIA MICROCEPHALA	0	10	5	3	17	10
NITZSCHIA PALEA	29	22	89	127	60	22

APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

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--------------------------------------------------------------------------------
                                            NUMBER OBSERVED
TAXONOMIC NAME               REP #1  REP #2  REP #3  REP #4  REP #5  REP #6
--------------------------------------------------------------------------------
STATION= YC-2
SAMPLING DATE= 04OCT82


NITZSCHIA ROMANA                  0       1       0       0       1       0
NITSCHIA TRYBLIONELLA VAR. LE    OSIS     0       0       0       1       0
RHOICOSPHENIA CURVATA             5      12       7      24       3       6
RHOPALODIA GIBBA                 14      11      20       1      76      53
RHOPALODIA MUSCULUS              36      27      73      17      11      62
SURIRELLA OVALIS                  0       4       1       0       0       0
SURIRELLA OVATA                   0       0       0       0       0       2
SYNEDRA ACUS                      0       1       0       0       0       0
SYNEDRA PULCHELLA VAR. LANCEO     8       4       2       0       2       1
SYNSDRA FASCICULATA               0       1       3       2       3       5
SYNEDRA ULNA                      0       2       0       0       0       0
SYNEDRA ULNA                      0       0       0       1       0       2
PHORMIDIUM SPECIES                0       0       0       0       3       0
STIGEOCLONIUM TENUE               0       0       0       1      14       0
--------------------------------------------------------------------------------
TOTAL COUNT                    1311    1091    1605    1073    1184    1065

--------------------------------------------------------------------------------
SEDGWICK - RAFTER COUNT AND CALCULATION DATA
SAMPLE VOLUME=  210
DILUTION FACTOR=  150
LENGTH OF S/R STRIP=    50
WIDTH OF S/R STRIP=     1
DEPTH OF S/R STRIP=     1
NUMBER OF S/R STRIPS COUNTED=  4
AREA OF SUBSTRATE SAMPLED= 5000
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APPENDIX 4-2.1 • PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= YC-3
SAMPLING DATE= 05OCT82

TAXONOMIC NAME	NUMBER OBSERVED REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
BULBOCHAETA SPECIES	29	1209	37	1188	125	94
CYCLOTELLA MENEGHINIANA	3	14	5	6	0	9
THALASSIOSIRA FLUVIATILIS	0	0	0	1	2	0
DEAD CENTRIC DIATOMS	3	21	3	1	0	0
DEAD PENNATE DIATOMS	42	110	4	65	8	49
LIVE CENTRIC DIATOMS	17	67	7	7	1	12
LIVE PENNATE DIATOMS	983	1575	90	1309	107	935
OSCILLATORIA SPECIES	0	2	0	2	0	0
ACHNANTHES AFFINIS	28	30	12	33	25	30
ACHNANTHES LANCEOLATA VAR. DU	0	0	3	1	0	0
ACHNANTHES EXIGUA	0	1	0	0	0	0
ACHNANTHES MINUTISSIMA	32	13	0	5	0	6
CYMBELLA AFFINIS	1	1	1	0	0	0
CYMBELLA MINUTA	0	2	0	0	0	0
CYMBELLA MINUTA VAR. SILESIAC	2	3	0	15	10	3
ENTOMONEIS PALUDOSA	0	0	4	8	0	5
FRAGILARIA CAPUCINA	0	0	0	1	0	0
FRAGILARIA VAUCHERIAE	1	1	2	12	0	2
GOMPHONEMA ANGUSTATUM	0	0	0	10	16	24
GOMPHONEMA SUBCLAVATUM	0	0	0	0	0	1
GYROSIGMA SPENCERII	0	0	0	1	0	0
MASTOGLOIA ELLIPTICA	0	0	1	0	0	0
NAVICULA CRYPTOCEPHALA	0	0	1	1	0	0
NAVICULA CINCTA	0	0	0	2	1	0
NAVICULA CRYPTOCEPHALA VAR. V	2	23	19	13	10	3
NAVICULA HEUFLERI	0	0	0	24	19	6
NAVICULA MENISCULUS	0	0	0	0	5	0
NAVICULA MINIMA	1	0	21	15	1	0
NAVICULA MINUSCULA	1	0	16	0	0	0
NAVICULA MUTICA	0	0	0	1	0	0
NAVICULA NOTHA	0	0	0	10	10	3
NAVICULA PELLICULOSA	0	0	0	0	1	0
NAVICULA RHYNCHOCEPHALA	0	0	0	1	0	0
NAVICULA SECRETA VAR. APICULA	0	3	4	4	0	0
NAVICULA VIRIDULA	0	18	10	0	0	0
NAVICULA VIRIDULA V. ROSTELLA	0	0	0	2	0	0
NITZSCHIA COMMUNIS	42	55	106	24	123	60
NITZSCHIA HUNGARICA	0	0	0	4	0	0
NITZSCHIA IGNORATA	0	0	0	1	0	0
NITZSCHIA INCONSPICUA	72	49	2	6	22	5
NITZSCHIA LINEARIS	0	3	2	1	0	1
NITZSCHIA MICROCEPHALA	27	11	0	0	10	11
NITZSCHIA PALEA	11	46	82	83	120	221
NITZSCHIA ROMANA	0	6	1	2	1	1
NITZSCHIA SPECIES	0	48	38	29	27	19
SURIRELLA LINEARIS	0	0	0	1	0	0

APPENDIX 4-2.1 . PERIPHYTON COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR

STATION= YC-3
SAMPLING DATE= 05OCT82

TAXONOMIC NAME	NUMBER OBSERVED REP #1	REP #2	REP #3	REP #4	REP #5	REP #6
SURIRELLA OVALIS	0	9	1	10	0	16
SURIRELLA OVATA	0	1	9	11	8	22
SYNEDRA PULCHELLA VAR. LANCEO	18	37	100	102	24	47
SYNSDRA FASCICULATA	0	0	1	3	0	0
SYNEDRA ULNA VAR. CONTRACTA	0	0	0	2	0	0
STIGEOCLONIUM TENUE	0	0	0	0	0	2
TOTAL COUNT	1315	3358	582	3017	676	1587

SEDGWICK - RAFTER COUNT AND CALCULATION DATA
SAMPLE VOLUME= 210
DILUTION FACTOR= 150
LENGTH OF S/R STRIP= 50
WIDTH OF S/R STRIP= 1
DEPTH OF S/R STRIP= 1
NUMBER OF S/R STRIPS COUNTED= 4
AREA OF SUBSTRATE SAMPLED= 5000

APPENDIX 4-2.2

Density and Station Occurrence of Periphyton Sampled in 1982

APPENDIX 4-2.2. DENSITY AND STATION OCCURENCE FOR THE PERIPHYTON SPECIES SAMPLED DURING THE SPRING SAMPLING SEASON IN1982

TAXONOMIC NAME	SPRING				
	CG- 1 (#/MM2)	YC- 1 (#/MM2)	YC- 2 (#/MM2)	YC- 3 (#/MM2)	SPECIES TOTAL
ANABAENA SPECIES	.	46.88	109.38	.	156.25
BULBOCHAETA SPECIES	.	.	.	16375	16375
CYCLOTELLA MENEGHINIANA	15.63	203.13	281.25	203.13	703.13
MELOSIRA GRANULATA	31.25	.	.	.	31.25
STEPHANODISCUS HANTZSCHII	93.75	.	.	.	93.75
THALASSIOSIRA FLUVIATILIS	31.25	109.38	.	.	140.63
DACTYLOCOCCOPSIS RAPHIDIOIDES	.	15.63	156.25	.	171.88
CALOTHRIX SPECIES	125.00	.	.	.	125.00
DEAD CENTRIC DIATOMS	.	187.50	46.88	46.88	281.25
DEAD PENNATE DIATOMS	1203.13	22921.9	13718.8	18359.4	56203.1
LIVE CENTRIC DIATOMS	171.88	1406.25	250.00	359.38	2187.50
LIVE PENNATE DIATOMS	14078.1	214969	138953	161563	529563
MICROSPORA SPECIES	.	93.75	.	.	93.75
OSCILLATORIA SPECIES	.	.	.	62.50	62.50
ACHNANTHES AFFINIS	12531.3	6984.38	12078.1	10015.6	41609.4
ACHNANTHES DEFLEXA	.	.	15.63	.	15.63
ACHNANTHES LANCEOLATA	15515.6	1234.38	843.75	281.25	17875
ACHNANTHES EXIGUA	.	15.63	.	.	15.63
ACHNANTHES HAUCKIANA	.	.	171.88	.	171.88
ACHNANTHES LANCEOLATA	62.50	187.50	15.63	31.25	296.88
ACHNANTHES LINEARIS	31.25	.	.	.	31.25
ACHNANTHES MICROCEPHALA	234.38	.	31.25	.	265.63
ACHNANTHES MINUTISSIMA	2640.63	281.25	468.75	.	3390.63
AMPHORA OVALIS VAR. AFFINIS	15.63	.	.	.	15.63
AMPHORA OVALIS	.	78.13	62.50	.	140.63
AMPHORA PERPUSILLA	31.25	31.25	.	.	62.50
AMPHORA VENETA	15.63	.	.	.	15.63
ASTERIONELLA FORMOSA	15.63	.	.	.	15.63
CALONEIS VENTRICOSA	15.63	.	31.25	.	46.88
COCCONEIS PLACENTULA	31.25	156.25	125.00	15.63	328.13
CYMBELLA CYMBIFORMIS VAR. NON	15.63	.	.	.	15.63
CYMBELLA MICROCEPHALA	46.88	31.25	.	.	78.13
CYMBELLA MINUTA	46.88	.	31.25	.	78.13
CYMBELLA MINUTA VAR. SILESIAC	203.13	31.25	125.00	218.75	578.13
DENTICULA ELEGANS	.	.	15.63	.	15.63
DIATOMA HIEMALE VAR. MESODON	593.75	.	.	.	593.75
DIATOMA TENUE VAR. ELONGATUM	.	31.25	46.88	31.25	109.38
DIATOMA VULGARE	.	.	.	62.50	62.50
ENTOMONEIS PALUDOSA	.	.	93.75	15.63	109.38
ENTOMONEIS PALUDOSA	.	.	93.75	46.88	140.63
EPHITHEMIA SOREX	15.63	.	.	.	15.63
FRAGILARIA CAPUCINA	46.88	93.75	2375.00	468.75	2984.38
FRAGILARIA VAUCHERIAE	265.63	734.38	203.13	2796.88	4000.00
GOMPHONEMA ANGUSTATUM	156.25	734.38	125.00	78.13	1093.75
GOMPHONEMA GRACILE	.	.	.	171.88	171.88
GOMPHONEMA OLIVACIUM	15.63	93.75	906.25	218.75	1234.38
GOMPHONEMA PARVULUM	140.63	.	.	15.63	156.25
GOMPHONEMA SUBCLAVATUM	.	31.25	46.88	.	78.13

APPENDIX 4-2.2 . DENSITY AND STATION OCCURENCE FOR THE PERIPHYTON SPECIES SAMPLED DURING THE SPRING SAMPLING SEASON IN1982

TAXONOMIC NAME	SPRING				
	CG- 1 (#/MM2)	YC- 1 (#/MM2)	YC- 2 (#/MM2)	YC- 3 (#/MM2)	SPECIES TOTAL
GYROSIGMA SPENCERII	•	15.63	171.88	46.88	234.38
HANTZSCHIA AMPHIOXYS	46.88	46.88	62.50	•	156.25
HANNAEA ARCUS	156.25	•	109.38	15.63	281.25
PINNULARIA BREBISSONII	•	•	31.25	•	31.25
PINNULARIA MAJOR	•	15.63	31.25	•	46.88
MASTOGLOIA ELLIPTICA	•	•	•	31.25	31.25
MERIDION CIRCULARE	203.13	•	•	•	203.13
NAVICULA ARVENSIS	281.25	187.50	3093.75	109.38	3671.88
NAVICULA ARVENSIS	31.25	187.50	3093.75	109.38	3421.88
NAVICULA ATOMUS	•	•	•	2093.75	2093.75
NAVICULA AURICULATA	281.25	•	•	•	281.25
NAVICULA CINCTA	•	•	15.63	•	15.63
NAVICULA CINCTA VAR. ROSTRATA	•	•	•	140.63	140.63
NAVICULA CRYPTOCEPHALA VAR. V	218.75	546.88	578.13	46.88	1390.63
NAVICULA HALOPHILA	•	•	•	234.38	234.38
NAVICULA HEUFLERI	•	156.25	125.00	31.25	312.50
NAVICULA LANCEOLATA	•	15.63	•	•	15.63
NAVICULA LUZONENSIS	15.63	•	15.63	•	31.25
NAVICULA MINIMA	218.75	31.25	93.75	•	343.75
NAVICULA MUTICA	•	109.38	31.25	•	140.63
NAVICULA NOTHA	171.88	234.38	406.25	•	812.50
NAVICULA PELLICULOSA	7468.75	12968.8	8687.50	14875	44000
NAVICULA PUPULA VAR. CAPITATA	78.13	•	•	•	78.13
NAVICULA SALINARUM	•	•	•	140.63	140.63
NAVICULA SECRETA VAR. APICUL	2281.25	1203.13	328.13	156.25	3968.75
NAVICULA TRIPUNCTATA VAR. SCH	• IDE	62.50	62.50	•	125.00
NAVICULA VIRIDULA VAR. AVENAC	250.00	2046.88	187.50	•	2484.38
NAVICULA VIRIDULA V. ROSTELLA	•	15.63	•	•	15.63
NITZSCHIA ACICULARIS	62.50	•	46.88	•	109.38
NITZSCHIA APICULATA	31.25	•	•	•	31.25
NITZSCHIA COMMUNIS	140.63	609.38	171.88	78.13	1000.00
NITZSCHIA DENTICULA	15.63	•	15.63	•	31.25
NITZSCHIA DISSIPATA	125.00	•	•	•	125.00
NITZSCHIA FONTICOLA	125.00	937.50	687.50	15.63	1765.63
NITZSCHIA FRUSTULUM	812.50	7531.25	4515.63	4953.13	17812.5
NITZSCHIA HOLSTATICA	125.00	4000.00	6656.25	•	10781.3
NITZSCHIA HUNGARICA	62.50	750.00	78.13	31.25	921.88
NITZSCHIA LATENS	•	46.88	•	•	46.88
NITZSCHIA LINEARIS	250.00	46.88	15.63	•	312.50
NITZSCHIA MICROCEPHALA	•	•	•	375.00	375.00
NITZSCHIA PALEA	781.25	1890.63	2250.00	953.13	5875.00
NITZSCHIA ROMANA	31.25	46.88	109.38	15.63	203.13
NITZSCHIA SPECIES	15.63	•	•	62.50	78.13
NITSCHIA TRYBLIONELLA VAR. LE	• S	•	62.50	•	62.50
RHOICOSPHENIA CURVATA	•	•	203.13	•	203.13
RHOPALODIA GIBBA	•	•	234.38	•	234.38
RHOPALODIA MUSCULUS	15.63	15.63	31.25	31.25	93.75
SURIRELLA OVALIS	62.50	187.50	62.50	1312.50	1625.00

APPENDIX 4-2.2. DENSITY AND STATION OCCURENCE FOR THE PERIPHYTON SPECIES SAMPLED DURING THE SPRING SAMPLING SEASON IN1982

TAXONOMIC NAME	SPRING				
	CG- 1 (#/MM2)	YC- 1 (#/MM2)	YC- 2 (#/MM2)	YC- 3 (#/MM2)	SPECIES TOTAL
SURIRELLA OVATA	281.25	2546.88	500.00	6687.50	10015.6
SYNSDRA FASCICULATA	93.75	31.25	.	15.63	140.63
SYNEDRA PULCHELLA VAR. LANCEO	.	.	.	93.75	93.75
SYNEDRA MINUSCULA	78.13	15.63	93.75	.	187.50
SYNEDRA ULNA	.	.	46.88	.	46.88
PHACUS SPECIES	.	15.63	.	.	15.63
PHORMIDIUM SPECIES	10312.5	15.63	.	.	10328.1
STIGEOCLONIUM TENUE	421.88	281.25	27781.3	.	28484.4
ULOTHRIX SPECIES	.	218.75	.	.	218.75
TOTAL SPECIES SAMPLED=105					
TOTAL DENSITY	73984.4	287734	232109	244094	837922
MEAN STATION DENSITY	704.61	2740.33	2210.57	2324.70	2.08

APPENDIX 4-2.2 . DENSITY AND STATION OCCURENCE FOR THE PERIPHYTON SPECIES SAMPLED DURING THE SPRING SAMPLING SEASON IN1982

TAXONOMIC NAME			SUMMER		
	CG- 1 (#/MM2)	YC- 1 (#/MM2)	YC- 2 (#/MM2)	YC- 3 (#/MM2)	SPECIES TOTAL
ANABAENA SPECIES	4296.88	.	2343.75	890.63	7531.25
BATRACHOSPERMUM SPECIES	5828.13	.	.	.	5828.13
BULBOCHAETA SPECIES	.	.	31296.9	67765.6	99062.5
CYCLOTELLA MENEGHINIANA	46.88	.	3703.13	8453.13	12203.1
THALASSIOSIRA FLUVIATILIS	.	.	1421.88	203.13	1625.00
CYLINDROTHECA GRACILIS	31.25	.	.	.	31.25
DACTYLOCOCCOPSIS RAPHIDIOIDES	.	.	15.63	.	15.63
CLADOPHORA SPECIES	.	.	187.50	.	187.50
DEAD CENTRIC DIATOMS	.	.	703.13	453.13	1156.25
DEAD PENNATE DIATOMS	7968.75	.	6250.00	3359.38	17578.1
ENTEROMORPHA SPECIES	8890.63	.	.	.	8890.63
LIVE CENTRIC DIATOMS	31.25	.	11140.6	4500.00	15671.9
LIVE PENNATE DIATOMS	49578.1	.	71031.3	35812.5	156422
MERISMOPEDIA SPECIES	.	.	62.50	.	62.50
MICROSPORA SPECIES	656.25	.	.	.	656.25
MOUGEOTIA SPECIES	46.88	.	.	.	46.88
OOCYSTIS SPECIES	.	.	15.63	.	15.63
OSCILLATORIA SPECIES	46.88	.	203.13	.	250.00
ACHNANTHES AFFINIS	18593.8	.	703.13	781.25	20078.1
ACHNANTHES LANCEOLATA VAR. DU	593.75	.	234.38	781.25	1609.38
ACHNANTHES HAUCKIANA VAR. ROS	15.63	.	1781.25	1562.50	3359.38
ACHNANTHES LANCEOLATA	.	.	.	125.00	125.00
ACHNANTHES MICROCEPHALA	31.25	.	31.25	.	62.50
ACHNANTHES MINUTISSIMA	718.75	.	93.75	265.63	1078.13
AMPHORA OVALIS	31.25	.	.	.	31.25
AMPHORA PERPUSILLA	31.25	.	.	.	31.25
AMPHORA VENETA	421.88	.	15.63	.	437.50
CALONEIS AMHISBAENA	15.63	.	.	.	15.63
CALONEIS VENTRICOSA	156.25	.	.	.	156.25
COCCONEIS PEDICULUS	.	.	62.50	.	62.50
COCCONEIS PLACENTULA	.	.	218.75	.	218.75
CYMBELLA AFFINIS	.	.	.	125.00	125.00
CYMBELLA MINUTA	187.50	.	171.88	265.63	625.00
CYMBELLA MINUTA VAR. SILESIAC	609.38	.	1921.88	1171.88	3703.13
ENTOMONEIS PALUDOSA	.	.	156.25	484.38	640.63
EPITHEMIA TURGIDA	.	.	46.88	.	46.88
EUNOTIA PECTINALIS	15.63	.	.	.	15.63
FRAGILARIA CAPUCINA	171.88	.	125.00	.	296.88
FRAGILARIA PINNATA	.	.	15.63	.	15.63
FRAGILARIA VAUCHERIAE	1671.88	.	.	515.63	2187.50
GOMPHONEMA ANGUSTATUM	109.38	.	15.63	62.50	187.50
GOMPHONEMA CLEVEI	.	.	.	15.63	15.63
GOMPHONEMA OLIVACIUM	31.25	.	.	15.63	46.88
GOMPHONEMA SUBCLAVATUM	78.13	.	46.88	93.75	218.75
GOMPHONEMA TRUNCATUM	.	.	.	15.63	15.63
GYROSIGMA SPENCERII	78.13	.	187.50	31.25	296.88
HANTZSCHIA AMPHIOXYS	62.50	.	.	62.50	125.00
PINNULARIA BREBISSONII	46.88	.	62.50	.	109.38

APPENDIX 4-2.2 . DENSITY AND STATION OCCURENCE FOR THE PERIPHYTON SPECIES SAMPLED DURING THE SPRING SAMPLING SEASON IN1982

TAXONOMIC NAME			SUMMER		
	CG- 1 (#/MM2)	YC- 1 (#/MM2)	YC- 2 (#/MM2)	YC- 3 (#/MM2)	SPECIES TOTAL
PLEUROSIGMA DELICATULUM	46.88	.	2187.50	46.88	2281.25
MERIDION CIRCULARE	15.63	.	.	.	15.63
NAVICULA ARVENSIS	109.38	.	93.75	31.25	234.38
NAVICULA CRYPTOCEPHALA	156.25	.	31.25	15.63	203.13
NAVICULA CINCTA	156.25	.	31.25	78.13	265.63
NAVICULA CRYPTOCEPHALA	.	.	.	31.25	31.25
NAVICULA CUSPIDATA	.	.	.	15.63	15.63
NAVICULA CRYPTOCEPHALA	531.25	.	453.13	2328.13	3312.50
NAVICULA ELGINENSIS	15.63	.	.	.	15.63
NAVICULA HALOPHILA	62.50	.	93.75	531.25	687.50
NAVICULA HEUFLERI	296.88	.	46.88	187.50	531.25
NAVICULA LANCEOLATA	31.25	.	15.63	.	46.88
NAVICULA LUZONENSIS	93.75	.	.	.	93.75
NAVICULA MENISCULUS	203.13	.	.	.	203.13
NAVICULA MINIMA	109.38	.	15.63	78.13	203.13
NAVICULA MENISCULUS	.	.	.	31.25	31.25
NAVICULA MINUSCULA	.	.	.	218.75	218.75
NAVICULA MUTICA	62.50	.	.	15.63	78.13
NAVICULA NOTHA	62.50	.	31.25	281.25	375.00
NAVICULA PELLICULOSA	1984.38	.	46.88	406.25	2437.50
NAVICULA PUPULA	31.25	.	.	.	31.25
NAVICULA PYGMAEA	15.63	.	.	15.63	31.25
NAVICULA SALINARUM	.	.	.	218.75	218.75
NAVICULA SECRETA	3078.13	.	.	187.50	3265.63
NAVICULA SPECIES	15.63	.	.	.	15.63
NAVICULA TRIPUNCTATA	.	.	15.63	109.38	125.00
NAVICULA VIRIDULA	.	.	93.75	78.13	171.88
NAVICULA VIRIDULA	3109.38	.	31.25	.	3140.63
NAVICULA VIRIDULA	.	.	125.00	109.38	234.38
NITZSCHIA ACICULARIS	62.50	.	265.63	.	328.13
NITZSCHIA COMMUNIS	656.25	.	406.25	2062.50	3125.00
NITZSCHIA DENTICULA	.	.	15.63	.	15.63
NITZSCHIA FRUSTULUM	4187.50	.	15125	9562.50	28875
NITZSCHIA GRACILIS	.	.	734.38	.	734.38
NITZSCHIA HOLSTATICA	15.63	.	250.00	1234.38	1500.00
NITZSCHIA HUNGARICA	187.50	.	187.50	625.00	1000.00
NITZSCHIA IGNORATA	.	.	.	15.63	15.63
NITZSCHIA INCONSPICUA	.	.	6359.38	4625.00	10984.4
NITZSCHIA LATENS	.	.	.	31.25	31.25
NITZSCHIA LINEARIS	2187.50	.	156.25	140.63	2484.38
NITZSCHIA MICROCEPHALA	31.25	.	2656.25	437.50	3125.00
NITZSCHIA PALEA	2421.88	.	3890.63	2609.38	8921.88
NITZSCHIA PALEACEA	46.88	.	15.63	187.50	250.00
NITZSCHIA ROMANA	312.50	.	406.25	265.63	984.38
NITZSCHIA SPECIES	31.25	.	.	78.13	109.38
NITSCHIA TRYBLIONELLA	.	.	31.25	.	31.25
RHOICOSPHENIA CURVATA	.	.	62.50	.	62.50
RHOPALODIA GIBBA	15.63	.	687.50	78.13	781.25

APPENDIX 4-2.2 . DENSITY AND STATION OCCURENCE FOR THE PERIPHYTON SPECIES SAMPLED DURING THE SPRING SAMPLING SEASON IN1982

TAXONOMIC NAME			SUMMER		
	CG- 1 (#/MM2)	YC- 1 (#/MM2)	YC- 2 (#/MM2)	YC- 3 (#/MM2)	SPECIES TOTAL
RHOPALODIA MUSCULUS	15.63	.	265.63	468.75	750.00
RHOPALODIA MUSCULUS	15.63	.	31.25	468.75	515.63
SURIRELLA ANGUSTATA	31.25	.	.	.	31.25
SURIRELLA LINEARIS	31.25	.	.	62.50	93.75
SURIRELLA OVALIS	390.63	.	15.63	1671.88	2078.13
SURIRELLA OVATA	609.38	.	.	187.50	796.88
SYNEDRA ACUS	31.25	.	15.63	.	46.88
SYNSDRA FASCICULATA	15.63	.	218.75	.	234.38
SYNEDRA PULCHELLA VAR. LANCEO	.	.	328.13	2703.13	3031.25
SYNEDRA ULNA VAR. CONTRACTA	.	.	656.25	.	656.25
SYNEDRA ULNA	.	.	140.63	15.63	156.25
SYNEDRA ULNA VAR. ULNA	.	.	62.50	.	62.50
PHORMIDIUM SPECIES	5437.50	.	15.63	.	5453.13
RHIZOCLONIUM SPECIES	.	.	1640.63	.	1640.63
SCENEDESMUS SPECIES	.	.	62.50	.	62.50
SPIROGYRA SPECIES	156.25	.	.	671.88	828.13
STIGEOCLONIUM TENUE	.	.	5515.63	31.25	5546.88
ULOTHRIX ZONATA	2390.63	.	.	.	2390.63
VAUCHERIA SPECIES	421.88	.	.	.	421.88
TOTAL SPECIES SAMPLED=115					
TOTAL DENSITY	130984	0.00	177797	161063	469844
MEAN STATION DENSITY	1138.99	0.00	1546.06	1400.54	3.67

APPENDIX 4-2.2. DENSITY AND STATION OCCURENCE FOR THE PERIPHYTON SPECIES SAMPLED DURING THE SPRING SAMPLING SEASON IN1982

TAXONOMIC NAME	FALL CG- 1 (#/MM2)	 YC- 1 (#/MM2)	 YC- 2 (#/MM2)	 YC- 3 (#/MM2)	 SPECIES TOTAL
ANABAENA SPECIES	15.63	62.50	156.25	.	234.38
BATRACHOSPERMUM SPECIES	3375.00	281.25	.	.	3656.25
BULBOCHAETA SPECIES	.	62.50	50093.8	41906.3	92062.5
CYCLOTELLA MENEGHINIANA	531.25	437.50	328.13	578.13	1875.00
THALASSIOSIRA FLUVIATILIS	.	.	1890.63	46.88	1937.50
CLADOPHORA GLOMERATA	1296.88	281.25	.	.	1578.13
DEAD CENTRIC DIATOMS	.	93.75	250.00	437.50	781.25
DEAD PENNATE DIATOMS	1062.50	1828.13	1234.38	4343.75	8468.75
LIVE CENTRIC DIATOMS	265.63	531.25	953.13	1734.38	3484.38
LIVE PENNATE DIATOMS	12484.4	39781.3	14203.1	78109.4	144578
LYNGBYA SPECIES	.	.	15.63	.	15.63
MERISMOPEDIA SPECIES	.	.	31.25	.	31.25
OSCILLATORIA SPECIES	.	.	46.88	62.50	109.38
ACHNANTHES AFFINIS	6562.50	421.88	296.88	2468.75	9750.00
ACHNANTHES LANCEOLATA	1937.50	1078.13	625.00	62.50	3703.13
ACHNANTHES EXIGUA	.	.	.	15.63	15.63
ACHNANTHES HAUCKIANA VAR. ROS	.	171.88	4359.38	.	4531.25
ACHNANTHES MINUTISSIMA	16937.5	140.63	593.75	875.00	18546.9
AMPHORA OVALIS	.	.	15.63	.	15.63
AMPHORA PERPUSILLA	31.25	.	.	.	31.25
CALONEIS AMHISBAENA	.	15.63	.	.	15.63
CALONEIS VENTRICOSA	.	31.25	.	.	31.25
COCCONEIS PEDICULUS	.	.	31.25	.	31.25
COCCONEIS PLACENTULA	.	375.00	718.75	.	1093.75
CYMBELLA AFFINIS	.	.	.	46.88	46.88
CYMBELLA CYMBIFORMIS VAR. NON	31.25A	.	.	.	31.25
CYMBELLA MINUTA	15.63	15.63	.	31.25	62.50
CYMBELLA MINUTA VAR. SILESIAC	109.38	.	1515.63	515.63	2140.63
DIATOMA TENUE VAR. ELONGATUM	.	15.63	.	.	15.63
DIATOMA VULGARE	15.63	.	.	.	15.63
ENTOMONEIS PALUDOSA	.	31.25	31.25	265.63	328.13
FRAGILARIA CAPUCINA	.	5328.13	93.75	15.63	5437.50
FRAGILARIA VAUCHERIAE	31.25	62.50	31.25	281.25	406.25
GOMPHONEMA ANGUSTATUM	125.00	1031.25	.	781.25	1937.50
GOMPHONEMA GRACILE	.	62.50	.	.	62.50
GOMPHONEMA OLIVACIUM	.	.	15.63	.	15.63
GOMPHONEMA PARVULUM	15.63	15.63	.	.	31.25
GOMPHONEMA SUBCLAVATUM	.	.	31.25	15.63	46.88
GYROSIGMA SPENCERII	15.63	156.25	1531.25	15.63	1718.75
HANTZSCHIA AMPHIOXYS	.	31.25	31.25	.	62.50
PINNULARIA BREBISSONII	.	46.88	15.63	.	62.50
MASTOGLOIA ELLIPTICA	.	.	.	15.63	15.63
NAVICULA ARVENSIS	.	15.63	265.63	.	281.25
NAVICULA ATOMUS	.	.	15.63	.	15.63
NAVICULA AURICULATA	46.88	.	.	.	46.88
NAVICULA CRYPTOCEPHALA	.	62.50	.	31.25	93.75
NAVICULA CINCTA	46.88	46.88	.	46.88	140.63
NAVICULA CRYPTOCEPHALA VAR.	3093.75	78.13	93.75	1093.75	4359.38

APPENDIX 4-2.2. DENSITY AND STATION OCCURENCE FOR THE PERIPHYTON SPECIES SAMPLED DURING THE SPRING SAMPLING SEASON IN1982

TAXONOMIC NAME	FALL				
	CG- 1 (#/MM2)	YC- 1 (#/MM2)	YC- 2 (#/MM2)	YC- 3 (#/MM2)	SPECIES TOTAL
NAVICULA HALOPHILA	375.00	140.63	.	.	515.63
NAVICULA HEUFLERI	93.75	171.88	359.38	765.63	1390.63
NAVICULA LUZONENSIS	.	.	15.63	.	15.63
NAVICULA MENISCULUS	.	.	.	78.13	78.13
NAVICULA MINIMA	31.25	62.50	.	593.75	687.50
NAVICULA MINUSCULA	12265.6	.	171.88	265.63	12703.1
NAVICULA MUTICA	.	15.63	31.25	15.63	62.50
NAVICULA NOTHA	62.50	234.38	312.50	359.38	968.75
NAVICULA PELLICULOSA	.	171.88	46.88	15.63	234.38
NAVICULA PYGMAEA	.	.	15.63	.	15.63
NAVICULA RHYNCHOCEPHALA	.	.	.	15.63	15.63
NAVICULA SECRETA	3531.25	15.63	218.75	171.88	3937.50
NAVICULA TRIPUNCTATA VAR. SCH	.	15.63	.	.	15.63
NAVICULA VIRIDULA	250.00	46.88	218.75	437.50	953.13
NAVICULA VIRIDULA V. ROSTELLA	.	.	.	31.25	31.25
NITZSCHIA ACICULARIS	15.63	.	.	.	15.63
NITZSCHIA COMMUNIS	31.25	562.50	125.00	6406.25	7125.00
NITZSCHIA DENTICULA	15.63	62.50	.	.	78.13
NITZSCHIA FRUSTULUM	1484.38	21250	15187.5	.	37921.9
NITZSCHIA HUNGARICA	15.63	953.13	359.38	62.50	1390.63
NITZSCHIA IGNORATA	.	15.63	.	15.63	31.25
NITZSCHIA INCONSPICUA	.	2625.00	3546.88	2437.50	8609.38
NITZSCHIA LINEARIS	46.88	156.25	62.50	109.38	375.00
NITZSCHIA MICROCEPHALA	.	7546.88	703.13	921.88	9171.88
NITZSCHIA PALEA	281.25	3843.75	5453.13	8796.88	18375
NITZSCHIA ROMANA	.	93.75	31.25	171.88	296.88
NITZSCHIA SPECIES	31.25	.	.	2515.63	2546.88
NITSCHIA TRYBLIONELLA VAR. LE	. S	.	15.63	.	15.63
RHOICOSPHENIA CURVATA	.	.	890.63	.	890.63
RHOPALODIA GIBBA	109.38	343.75	2734.38	.	3187.50
RHOPALODIA MUSCULUS	15.63	359.38	3531.25	.	3906.25
SURIRELLA LINEARIS	.	125.00	.	15.63	140.63
SURIRELLA OVALIS	46.88	31.25	78.13	562.50	718.75
SURIRELLA OVATA	15.63	62.50	31.25	796.88	906.25
SYNEDRA ACUS	78.13	62.50	15.63	.	156.25
SYNEDRA PULCHELLA VAR. LANCEO	15.63	171.88	265.63	5125.00	5578.13
SYNSDRA FASCICULATA	31.25	15.63	218.75	62.50	328.13
SYNEDRA MINUSCULA	62.50	171.88	.	.	234.38
SYNEDRA ULNA VAR. CONTRACTA	.	.	.	31.25	31.25
SYNEDRA ULNA	.	15.63	31.25	.	46.88
SYNEDRA ULNA	.	15.63	46.88	.	62.50
PHORMIDIUM SPECIES	1453.13	109.38	46.88	.	1609.38
SPIROGYRA SPECIES	343.75	62.50	.	.	406.25
STIGEOCLONIUM TENUE	.	.	234.38	31.25	265.63
ULOTHRIX ZONATA	31.25	.	.	.	31.25
TOTAL SPECIES SAMPLED=93					
TOTAL DENSITY	68781.3	92125	114516	164609	440031
MEAN STATION DENSITY	739.58	990.59	1231.35	1769.99	0.34

APPENDIX 4-2.3

Periphyton Density and Diversity Estimates for the 1982 Sampling Season

APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION CG-1 IN 1982

SEASON = SPRING
SAMPLE DATE = 26APR82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
CYCLOTELLA MENEGHINIANA	0.00	0.00	0.00	0.00	93.75	0.00	15.63
MELOSIRA GRANULATA	0.00	0.00	0.00	0.00	187.50	0.00	31.25
STEPHANODISCUS HANTZSCHII	0.00	281.25	0.00	0.00	281.25	0.00	93.75
THALASSIOSIRA FLUVIATILIS	0.00	93.75	0.00	0.00	93.75	0.00	31.25
CALOTHRIX SPECIES	0.00	0.00	93.75	656.25	0.00	0.00	125.00
ACHNANTHES AFFINIS	16781.25	12937.50	10875.00	17062.50	8812.50	8718.75	12531.25
ACHNANTHES LANCEOLATA VAR. DUBIA	16500.00	13500.00	15375.00	13687.50	16125.00	17906.25	15515.63
ACHNANTHES LANCEOLATA	0.00	0.00	0.00	0.00	375.00	0.00	62.50
ACHNANTHES LINEARIS	0.00	0.00	0.00	187.50	0.00	0.00	31.25
ACHNANTHES MICROCEPHALA	281.25	468.75	93.75	93.75	468.75	0.00	234.38
ACHNANTHES MINUTISSIMA	1406.25	1687.50	1031.25	2343.75	1312.50	8062.50	2640.63
AMPHORA OVALIS VAR. AFFINIS	0.00	0.00	0.00	0.00	93.75	0.00	15.63
AMPHORA PERPUSILLA	0.00	0.00	0.00	0.00	187.50	0.00	31.25
AMPHORA VENETA	93.75	0.00	0.00	0.00	0.00	0.00	15.63
ASTERIONELLA FORMOSA	0.00	0.00	0.00	0.00	93.75	0.00	15.63
CALONEIS VENTRICOSA	0.00	0.00	0.00	93.75	0.00	0.00	15.63
COCCONEIS PLACENTULA	0.00	187.50	0.00	0.00	0.00	0.00	31.25
CYMBELLA CYMBIFORMIS VAR. NONPUNCT	0.00	0.00	0.00	0.00	93.75	0.00	15.63
CYMBELLA MICROCEPHALA	0.00	0.00	0.00	0.00	281.25	0.00	46.88
CYMBELLA MINUTA	0.00	0.00	0.00	0.00	281.25	0.00	46.88
CYMBELLA MINUTA VAR. SILESIACA	0.00	0.00	750.00	0.00	468.75	0.00	203.13
DIATOMA HIEMALE VAR. MESODON	0.00	0.00	0.00	0.00	3562.50	0.00	593.75
EPHITHEMIA SOREX	0.00	0.00	0.00	93.75	0.00	0.00	15.63
FRAGILARIA CAPUCINA	0.00	0.00	0.00	0.00	187.50	93.75	46.88
FRAGILARIA VAUCHERIAE	0.00	187.50	375.00	93.75	937.50	0.00	265.63
GOMPHONEMA ANGUSTATUM	0.00	93.75	656.25	0.00	0.00	187.50	156.25
GOMPHONEMA OLIVACIUM	0.00	0.00	0.00	0.00	0.00	93.75	15.63
GOMPHONEMA PARVULUM	468.75	0.00	187.50	0.00	187.50	0.00	140.63
HANTZSCHIA AMPHIOXYS	93.75	0.00	187.50	0.00	0.00	0.00	46.88
HANNAEA ARCUS	0.00	0.00	0.00	0.00	937.50	0.00	156.25
MERIDION CIRCULARE	562.50	0.00	187.50	0.00	281.25	187.50	203.13
NAVICULA ARVENSIS	750.00	0.00	656.25	93.75	187.50	0.00	281.25
NAVICULA ARVENSIS	0.00	0.00	0.00	0.00	93.75	93.75	31.25
NAVICULA AURICULATA	93.75	1031.25	281.25	0.00	281.25	0.00	281.25
NAVICULA CRYPTOCEPHALA VAR. VENETA	187.50	187.50	93.75	187.50	93.75	562.50	218.75
NAVICULA LUZONENSIS	0.00	0.00	0.00	0.00	93.75	0.00	15.63
NAVICULA MINIMA	562.50	93.75	375.00	187.50	0.00	93.75	218.75
NAVICULA NOTHA	468.75	0.00	375.00	0.00	0.00	187.50	171.88
NAVICULA PELLICULOSA	4125.00	12281.25	4312.50	9562.50	7500.00	7031.25	7468.75
NAVICULA PUPULA VAR. CAPITATA	0.00	0.00	0.00	468.75	0.00	0.00	78.13
NAVICULA SECRETA VAR. APICULATA	2625.00	2906.25	2437.50	1406.25	937.50	3375.00	2281.25
NAVICULA VIRIDULA VAR. AVENACEA	468.75	0.00	281.25	0.00	750.00	0.00	250.00
NITZSCHIA ACICULARIS	187.50	93.75	0.00	93.75	0.00	0.00	62.50
NITZSCHIA APICULATA	0.00	0.00	187.50	0.00	0.00	0.00	31.25
NITZSCHIA COMMUNIS	0.00	93.75	750.00	0.00	0.00	0.00	140.63

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APPENDIX       . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION CG-1 IN 1982

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         TAXONOMIC NAME                 REP. #1        REP. #2        REP. #3        REP. #4        REP. #5        REP. #6   MEAN REP
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NITZSCHIA DENTICULA                      0.00          93.75           0.00           0.00           0.00           0.00      15.63
NITZSCHIA DISSIPATA                      0.00         187.50           0.00           0.00         562.50           0.00     125.00
NITZSCHIA FONTICOLA                      0.00           0.00         750.00           0.00           0.00           0.00     125.00
NITZSCHIA FRUSTULUM                   1031.25         281.25        2906.25          93.75         375.00         187.50     812.50
NITZSCHIA HOLSTATICA                   750.00           0.00           0.00           0.00           0.00           0.00     125.00
NITZSCHIA HUNGARICA                    375.00           0.00           0.00           0.00           0.00           0.00      62.50
NITZSCHIA LINEARIS                       0.00         187.50         375.00         375.00         375.00         187.50     250.00
NITZSCHIA PALEA                       1593.75         281.25        1500.00         750.00         375.00         187.50     781.25
NITZSCHIA ROMANA                         0.00           0.00         187.50           0.00           0.00           0.00      31.25
NITZSCHIA SPECIES                        0.00           0.00           0.00          93.75           0.00           0.00      15.63
RHOPALODIA MUSCULUS                      0.00          93.75           0.00           0.00           0.00           0.00      15.63
SURIRELLA OVALIS                         0.00           0.00         375.00           0.00           0.00           0.00      62.50
SURIRELLA OVATA                          0.00           0.00        1500.00           0.00         187.50           0.00     281.25
SYNSDRA FASCICULATA                    375.00           0.00         187.50           0.00           0.00           0.00      93.75
SYNEDRA MINUSCULA                      375.00           0.00           0.00           0.00           0.00          93.75      78.13
PHORMIDIUM SPECIES                   13781.25          93.75        7781.25       29625.00        3187.50        7406.25   10312.50
STIGEOCLONIUM TENUE                    375.00           0.00         187.50        1687.50           0.00         281.25     421.88
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TOTAL DENSITY                        64312.50       47343.75       55312.50       78937.50       50343.75       54937.50   58531.25
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    DIVERSITY INDEX CALCULATIONS
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    SHANNON INDEX     =  2.246
    SPECIES EVENNESS =  .1253
    SPECIES RICHNESS =     62
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APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION YC-1 IN 1982

SEASON = SPRING
SAMPLE DATE = 26APR82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
ANABAENA SPECIES	0.00	0.00	281.25	0.00	0.00	0.00	46.88
CYCLOTELLA MENEGHINIANA	93.75	93.75	281.25	187.50	468.75	93.75	203.13
THALASSIOSIRA FLUVIATILIS	93.75	187.50	0.00	0.00	187.50	187.50	109.38
DACTYLOCOCCOPSIS RAPHIDIOIDES	0.00	0.00	0.00	93.75	0.00	0.00	15.63
MICROSPORA SPECIES	0.00	0.00	0.00	562.50	0.00	0.00	93.75
ACHNANTHES AFFINIS	3656.25	3187.50	6656.25	4968.75	10500.00	12937.50	6984.38
ACHNANTHES LANCEOLATA VAR. DUBIA	3000.00	2062.50	750.00	750.00	843.75	0.00	1234.38
ACHNANTHES EXIGUA	0.00	0.00	0.00	0.00	0.00	93.75	15.63
ACHNANTHES LANCEOLATA	187.50	0.00	0.00	93.75	375.00	468.75	187.50
ACHNANTHES MINUTISSIMA	0.00	0.00	0.00	187.50	187.50	1312.50	281.25
AMPHORA OVALIS	468.75	0.00	0.00	0.00	0.00	0.00	78.13
AMPHORA PERPUSILLA	0.00	0.00	0.00	0.00	187.50	0.00	31.25
COCCONEIS PLACENTULA	187.50	375.00	0.00	0.00	281.25	93.75	156.25
CYMBELLA MICROCEPHALA	0.00	0.00	0.00	93.75	0.00	93.75	31.25
CYMBELLA MINUTA VAR. SILESIACA	93.75	93.75	0.00	0.00	0.00	0.00	31.25
DIATOMA TENUE VAR. ELONGATUM	0.00	0.00	0.00	0.00	187.50	0.00	31.25
FRAGILARIA CAPUCINA	93.75	93.75	93.75	281.25	0.00	0.00	93.75
FRAGILARIA VAUCHERIAE	656.25	281.25	843.75	375.00	1218.75	1031.25	734.38
GOMPHONEMA ANGUSTATUM	656.25	562.50	1500.00	1218.75	187.50	281.25	734.38
GOMPHONEMA OLIVACIUM	93.75	93.75	281.25	93.75	0.00	0.00	93.75
GOMPHONEMA SUBCLAVATUM	0.00	0.00	93.75	0.00	0.00	93.75	31.25
GYROSIGMA SPENCERII	93.75	0.00	0.00	0.00	0.00	0.00	15.63
HANTZSCHIA AMPHIOXYS	0.00	0.00	93.75	93.75	93.75	0.00	46.88
PINNULARIA MAJOR	0.00	93.75	0.00	0.00	0.00	0.00	15.63
NAVICULA ARVENSIS	656.25	281.25	0.00	0.00	93.75	93.75	187.50
NAVICULA CRYPTOCEPHALA VAR. VENETA	937.50	562.50	281.25	468.75	937.50	93.75	546.88
NAVICULA HEUFLERI	281.25	93.75	187.50	281.25	93.75	0.00	156.25
NAVICULA LANCEOLATA	93.75	0.00	0.00	0.00	0.00	0.00	15.63
NAVICULA MINIMA	0.00	0.00	187.50	0.00	0.00	0.00	31.25
NAVICULA MUTICA	93.75	187.50	0.00	375.00	0.00	0.00	109.38
NAVICULA NOTHA	375.00	281.25	187.50	468.75	93.75	0.00	234.38
NAVICULA PELLICULOSA	2250.00	6937.50	13593.75	7312.50	20718.75	27000.00	12968.75
NAVICULA SECRETA VAR. APICULATA	0.00	3093.75	1031.25	468.75	2250.00	375.00	1203.13
NAVICULA TRIPUNCTATA VAR. SCHIZONE	187.50	0.00	0.00	187.50	0.00	0.00	62.50
NAVICULA VIRIDULA VAR. AVENACEA	6281.25	1406.25	2156.25	1875.00	281.25	281.25	2046.88
NAVICULA VIRIDULA V. ROSTELLATA	0.00	0.00	0.00	0.00	0.00	93.75	15.63
NITZSCHIA COMMUNIS	187.50	656.25	937.50	375.00	1125.00	375.00	609.38
NITZSCHIA FONTICOLA	1406.25	1781.25	562.50	1875.00	0.00	0.00	937.50
NITZSCHIA FRUSTULUM	9562.50	8531.25	9375.00	14437.50	2156.25	1125.00	7531.25
NITZSCHIA HOLSTATICA	6093.75	8250.00	3375.00	5906.25	375.00	0.00	4000.00
NITZSCHIA HUNGARICA	1406.25	1031.25	562.50	656.25	750.00	93.75	750.00
NITZSCHIA LATENS	93.75	0.00	0.00	187.50	0.00	0.00	46.88
NITZSCHIA LINEARIS	93.75	0.00	0.00	0.00	187.50	0.00	46.88
NITZSCHIA PALEA	2531.25	2812.50	2437.50	2250.00	1125.00	187.50	1890.63
NITZSCHIA ROMANA	0.00	93.75	0.00	0.00	0.00	187.50	46.88

APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION YC-1 IN 1982

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
RHOPALODIA MUSCULUS	0.00	93.75	0.00	0.00	0.00	0.00	15.63
SURIRELLA OVALIS	750.00	93.75	0.00	0.00	0.00	281.25	187.50
SURIRELLA OVATA	4031.25	4125.00	2718.75	2343.75	1968.75	93.75	2546.88
SYNSDRA FASCICULATA	0.00	93.75	0.00	0.00	93.75	0.00	31.25
SYNEDRA MINUSCULA	0.00	93.75	0.00	0.00	0.00	0.00	15.63
PHACUS SPECIES	0.00	0.00	0.00	93.75	0.00	0.00	15.63
PHORMIDIUM SPECIES	0.00	0.00	0.00	0.00	93.75	0.00	15.63
STIGEOCLONIUM TENUE	0.00	93.75	468.75	1031.25	93.75	0.00	281.25
ULOTHRIX SPECIES	937.50	281.25	0.00	0.00	0.00	93.75	218.75
TOTAL DENSITY	47625.00	48000.00	48937.50	49593.75	47156.25	47062.50	48062.50

DIVERSITY INDEX CALCULATIONS

SHANNON INDEX = 2.523
SPECIES EVENNESS = .1456
SPECIES RICHNESS = 54

APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION YC-2 IN 1982

SEASON = SPRING
SAMPLE DATE = 26APR82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
ANABAENA SPECIES	0.00	375.00	93.75	187.50	0.00	0.00	109.38
CYCLOTELLA MENEGHINIANA	0.00	562.50	1031.25	0.00	93.75	0.00	281.25
DACTYLOCOCCOPSIS RAPHIDIOIDES	375.00	187.50	0.00	93.75	281.25	0.00	156.25
ACHNANTHES AFFINIS	2062.50	14531.25	15468.75	16218.75	12562.50	11625.00	12078.13
ACHNANTHES DEFLEXA	0.00	93.75	0.00	0.00	0.00	0.00	15.63
ACHNANTHES LANCEOLATA VAR. DUBIA	562.50	1593.75	656.25	1687.50	375.00	187.50	843.75
ACHNANTHES HAUCKIANA VAR. ROSTRATA	281.25	0.00	468.75	93.75	187.50	0.00	171.88
ACHNANTHES LANCEOLATA	0.00	93.75	0.00	0.00	0.00	0.00	15.63
ACHNANTHES MICROCEPHALA	0.00	187.50	0.00	0.00	0.00	0.00	31.25
ACHNANTHES MINUTISSIMA	93.75	2625.00	0.00	0.00	0.00	93.75	468.75
AMPHORA OVALIS	0.00	375.00	0.00	0.00	0.00	0.00	62.50
CALONEIS VENTRICOSA	93.75	93.75	0.00	0.00	0.00	0.00	31.25
COCCONEIS PLACENTULA	281.25	281.25	0.00	0.00	93.75	93.75	125.00
CYMBELLA MINUTA	0.00	187.50	0.00	0.00	0.00	0.00	31.25
CYMBELLA MINUTA VAR. SILESIACA	0.00	656.25	0.00	93.75	0.00	0.00	125.00
DENTICULA ELEGANS	0.00	0.00	93.75	0.00	0.00	0.00	15.63
DIATOMA TENUE VAR. ELONGATUM	281.25	0.00	0.00	0.00	0.00	0.00	46.88
ENTOMONEIS PALUDOSA	93.75	281.25	93.75	93.75	0.00	0.00	93.75
FRAGILARIA CAPUCINA	4125.00	1218.75	2343.75	3937.50	562.50	2062.50	2375.00
FRAGILARIA VAUCHERIAE	0.00	562.50	375.00	0.00	187.50	93.75	203.13
GOMPHONEMA ANGUSTATUM	0.00	93.75	93.75	281.25	187.50	93.75	125.00
GOMPHONEMA OLIVACIUM	0.00	93.75	2250.00	1968.75	468.75	656.25	906.25
GOMPHONEMA SUBCLAVATUM	93.75	0.00	0.00	93.75	93.75	0.00	46.88
GYROSIGMA SPENCERII	187.50	187.50	93.75	281.25	0.00	281.25	171.88
HANTZSCHIA AMPHIOXYS	0.00	187.50	0.00	93.75	0.00	93.75	62.50
HANNAEA ARCUS	0.00	656.25	0.00	0.00	0.00	0.00	109.38
PINNULARIA BREBISSONII	0.00	93.75	93.75	0.00	0.00	0.00	31.25
PINNULARIA MAJOR	0.00	93.75	0.00	93.75	0.00	0.00	31.25
NAVICULA ARVENSIS	562.50	562.50	1875.00	1218.75	5718.75	8625.00	3093.75
NAVICULA CINCTA	0.00	0.00	0.00	0.00	93.75	0.00	15.63
NAVICULA CRYPTOCEPHALA VAR. VENETA	656.25	468.75	843.75	656.25	375.00	468.75	578.13
NAVICULA HEUFLERI	281.25	187.50	187.50	0.00	93.75	0.00	125.00
NAVICULA LUZONENSIS	0.00	0.00	0.00	0.00	0.00	93.75	15.63
NAVICULA MINIMA	0.00	93.75	0.00	187.50	93.75	187.50	93.75
NAVICULA MUTICA	0.00	93.75	0.00	0.00	93.75	0.00	31.25
NAVICULA NOTHA	562.50	937.50	93.75	375.00	375.00	93.75	406.25
NAVICULA PELLICULOSA	19125.00	2343.75	3656.25	5250.00	15937.50	5812.50	8687.50
NAVICULA SECRETA VAR. APICULATA	375.00	750.00	93.75	281.25	375.00	93.75	328.13
NAVICULA TRIPUNCTATA VAR. SCHIZONE	187.50	0.00	93.75	93.75	0.00	0.00	62.50
NAVICULA VIRIDULA VAR. AVENACEA	187.50	656.25	187.50	93.75	0.00	0.00	187.50
NITZSCHIA ACICULARIS	187.50	0.00	93.75	0.00	0.00	0.00	46.88
NITZSCHIA COMMUNIS	93.75	187.50	93.75	93.75	187.50	375.00	171.88
NITZSCHIA DENTICULA	0.00	93.75	0.00	0.00	0.00	0.00	15.63
NITZSCHIA FONTICOLA	656.25	656.25	750.00	656.25	0.00	1406.25	687.50
NITZSCHIA FRUSTULUM	3843.75	9093.75	3750.00	3562.50	3000.00	3843.75	4515.63

APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION YC-2 IN 1982

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
NITZSCHIA HOLSTATICA	9093.75	1406.25	10406.25	6562.50	4781.25	7687.50	6656.25
NITZSCHIA HUNGARICA	0.00	93.75	0.00	375.00	0.00	0.00	78.13
NITZSCHIA LINEARIS	93.75	0.00	0.00	0.00	0.00	0.00	15.63
NITZSCHIA PALEA	937.50	3281.25	2343.75	1312.50	656.25	4968.75	2250.00
NITZSCHIA ROMANA	93.75	93.75	93.75	0.00	0.00	375.00	109.38
NITSCHIA TRYBLIONELLA VAR. LEVIDEN	0.00	375.00	0.00	0.00	0.00	0.00	62.50
RHOICOSPHENIA CURVATA	375.00	468.75	281.25	93.75	0.00	0.00	203.13
RHOPALODIA GIBBA	375.00	468.75	281.25	281.25	0.00	0.00	234.38
RHOPALODIA MUSCULUS	0.00	93.75	0.00	0.00	0.00	93.75	31.25
SURIRELLA OVALIS	93.75	93.75	0.00	93.75	0.00	93.75	62.50
SURIRELLA OVATA	1031.25	375.00	0.00	750.00	93.75	750.00	500.00
SYNEDRA MINUSCULA	93.75	281.25	0.00	187.50	0.00	0.00	93.75
SYNEDRA ULNA	93.75	0.00	0.00	0.00	187.50	0.00	46.88
STIGEOCLONIUM TENUE	6843.75	90375.00	54843.75	7593.75	7031.25	0.00	27781.25
TOTAL DENSITY	54375.00	138844	103125	54937.50	54187.50	50250.00	75953.13

DIVERSITY INDEX CALCULATIONS

SHANNON INDEX = 2.255
SPECIES EVENNESS = .1273
SPECIES RICHNESS = 59

APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION YC-3 IN 1982

SEASON = SPRING
SAMPLE DATE = 27APR82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
BULBOCHAETA SPECIES	375.00	843.75	16125.00	375.00	80531.25	0.00	16375.00
CYCLOTELLA MENEGHINIANA	0.00	93.75	750.00	0.00	281.25	93.75	203.13
OSCILLATORIA SPECIES	0.00	0.00	281.25	0.00	93.75	0.00	62.50
ACHNANTHES AFFINIS	1968.75	937.50	23156.25	4406.25	29250.00	375.00	10015.63
ACHNANTHES LANCEOLATA VAR. DUBIA	93.75	281.25	93.75	1218.75	0.00	0.00	281.25
ACHNANTHES LANCEOLATA	0.00	0.00	0.00	0.00	187.50	0.00	31.25
COCCONEIS PLACENTULA	0.00	0.00	0.00	0.00	0.00	93.75	15.63
CYMBELLA MINUTA VAR. SILESIACA	0.00	187.50	843.75	0.00	281.25	0.00	218.75
DIATOMA TENUE VAR. ELONGATUM	93.75	0.00	0.00	0.00	0.00	93.75	31.25
DIATOMA VULGARE	0.00	0.00	0.00	0.00	0.00	375.00	62.50
ENTOMONEIS PALUDOSA	93.75	0.00	0.00	0.00	0.00	0.00	15.63
ENTOMONEIS PALUDOSA	0.00	0.00	0.00	93.75	187.50	0.00	46.88
FRAGILARIA CAPUCINA	0.00	1312.50	0.00	1500.00	0.00	0.00	468.75
FRAGILARIA VAUCHERIAE	1875.00	6187.50	843.75	4875.00	1031.25	1968.75	2796.88
GOMPHONEMA ANGUSTATUM	0.00	187.50	0.00	281.25	0.00	0.00	78.13
GOMPHONEMA GRACILE	562.50	281.25	0.00	187.50	0.00	0.00	171.88
GOMPHONEMA OLIVACIUM	0.00	562.50	0.00	750.00	0.00	0.00	218.75
GOMPHONEMA PARVULUM	0.00	0.00	0.00	93.75	0.00	0.00	15.63
GYROSIGMA SPENCERII	93.75	93.75	93.75	0.00	0.00	0.00	46.88
HANNAEA ARCUS	0.00	93.75	0.00	0.00	0.00	0.00	15.63
MASTOGLOIA ELLIPTICA	0.00	0.00	187.50	0.00	0.00	0.00	31.25
NAVICULA ARVENSIS	468.75	93.75	0.00	0.00	93.75	0.00	109.38
NAVICULA ATOMUS	0.00	2812.50	843.75	1031.25	187.50	7687.50	2093.75
NAVICULA CINCTA VAR. ROSTRATA	93.75	0.00	468.75	93.75	187.50	0.00	140.63
NAVICULA CRYPTOCEPHALA VAR. VENETA	0.00	0.00	93.75	93.75	93.75	0.00	46.88
NAVICULA HALOPHILA	0.00	0.00	93.75	0.00	1312.50	0.00	234.38
NAVICULA HEUFLERI	0.00	0.00	93.75	0.00	93.75	0.00	31.25
NAVICULA PELLICULOSA	16875.00	24656.25	6093.75	21187.50	1875.00	18562.50	14875.00
NAVICULA SALINARUM	187.50	0.00	187.50	375.00	93.75	0.00	140.63
NAVICULA SECRETA VAR. APICULATA	93.75	375.00	187.50	93.75	93.75	93.75	156.25
NITZSCHIA COMMUNIS	0.00	0.00	468.75	0.00	0.00	0.00	78.13
NITZSCHIA FONTICOLA	93.75	0.00	0.00	0.00	0.00	0.00	15.63
NITZSCHIA FRUSTULUM	10406.25	937.50	6843.75	1500.00	8906.25	1125.00	4953.13
NITZSCHIA HUNGARICA	0.00	0.00	93.75	93.75	0.00	0.00	31.25
NITZSCHIA MICROCEPHALA	0.00	281.25	1312.50	93.75	93.75	468.75	375.00
NITZSCHIA PALEA	281.25	1031.25	1031.25	1312.50	1406.25	656.25	953.13
NITZSCHIA ROMANA	0.00	0.00	93.75	0.00	0.00	0.00	15.63
NITZSCHIA SPECIES	0.00	0.00	375.00	0.00	0.00	0.00	62.50
RHOPALODIA MUSCULUS	0.00	0.00	187.50	0.00	0.00	0.00	31.25
SURIRELLA OVALIS	3843.75	750.00	937.50	656.25	187.50	1500.00	1312.50
SURIRELLA OVATA	10687.50	5625.00	1593.75	6937.50	1593.75	13687.50	6687.50
SYNSDRA FASCICULATA	0.00	0.00	0.00	0.00	0.00	93.75	15.63
SYNEDRA PULCHELLA VAR. LANCEOLATA	0.00	281.25	281.25	0.00	0.00	0.00	93.75
TOTAL DENSITY	48187.50	47906.25	63656.25	47250.00	128063	46875.00	63656.25

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APPENDIX       . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION YC-3 IN 1982

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         TAXONOMIC NAME                REP. #1        REP. #2        REP. #3         REP. #4        REP. #5         REP. #6   MEAN REP
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    DIVERSITY INDEX CALCULATIONS
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    SHANNON INDEX     =  2.144
    SPECIES EVENNESS =  .1313
    SPECIES RICHNESS =     43
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APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION CG-1 IN 1982

SEASON = SUMMER
SAMPLE DATE = 20JUL82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
ANABAENA SPECIES	375.00	93.75	0.00	0.00	0.00	25312.50	4296.88
BATRACHOSPERMUM SPECIES	12843.75	3468.75	0.00	2062.50	2625.00	13968.75	5828.13
CYCLOTELLA MENEGHINIANA	0.00	0.00	187.50	0.00	0.00	93.75	46.88
CYLINDROTHECA GRACILIS	0.00	93.75	0.00	93.75	0.00	0.00	31.25
ENTEROMORPHA SPECIES	0.00	6562.50	0.00	45562.50	0.00	1218.75	8890.63
MICROSPORA SPECIES	3937.50	0.00	0.00	0.00	0.00	0.00	656.25
MOUGEOTIA SPECIES	0.00	0.00	0.00	0.00	0.00	281.25	46.88
OSCILLATORIA SPECIES	0.00	0.00	0.00	0.00	0.00	281.25	46.88
ACHNANTHES AFFINIS	20625.00	4125.00	18187.50	18000.00	22031.25	28593.75	18593.75
ACHNANTHES LANCEOLATA VAR. DUBIA	1125.00	187.50	562.50	1406.25	187.50	93.75	593.75
ACHNANTHES HAUCKIANA VAR. ROSTRATA	93.75	0.00	0.00	0.00	0.00	0.00	15.63
ACHNANTHES MICROCEPHALA	0.00	0.00	187.50	0.00	0.00	0.00	31.25
ACHNANTHES MINUTISSIMA	0.00	937.50	1875.00	562.50	937.50	0.00	718.75
AMPHORA OVALIS	0.00	0.00	0.00	0.00	187.50	0.00	31.25
AMPHORA PERPUSILLA	187.50	0.00	0.00	0.00	0.00	0.00	31.25
AMPHORA VENETA	0.00	281.25	468.75	1312.50	375.00	93.75	421.88
CALONEIS AMHISBAENA	0.00	0.00	93.75	0.00	0.00	0.00	15.63
CALONEIS VENTRICOSA	93.75	187.50	375.00	281.25	0.00	0.00	156.25
CYMBELLA MINUTA	0.00	0.00	0.00	1031.25	93.75	0.00	187.50
CYMBELLA MINUTA VAR. SILESIACA	1031.25	750.00	281.25	93.75	93.75	1406.25	609.38
EUNOTIA PECTINALIS	0.00	93.75	0.00	0.00	0.00	0.00	15.63
FRAGILARIA CAPUCINA	281.25	0.00	0.00	375.00	281.25	93.75	171.88
FRAGILARIA VAUCHERIAE	1125.00	750.00	562.50	4218.75	562.50	2812.50	1671.88
GOMPHONEMA ANGUSTATUM	93.75	0.00	0.00	187.50	0.00	375.00	109.38
GOMPHONEMA OLIVACIUM	0.00	93.75	0.00	0.00	93.75	0.00	31.25
GOMPHONEMA SUBCLAVATUM	0.00	0.00	93.75	93.75	0.00	281.25	78.13
GYROSIGMA SPENCERII	0.00	0.00	187.50	187.50	93.75	0.00	78.13
HANTZSCHIA AMPHIOXYS	187.50	0.00	0.00	93.75	93.75	0.00	62.50
PINNULARIA BREBISSONII	93.75	187.50	0.00	0.00	0.00	0.00	46.88
PLEUROSIGMA DELICATULUM	0.00	0.00	93.75	93.75	93.75	0.00	46.88
MERIDION CIRCULARE	0.00	0.00	0.00	0.00	93.75	0.00	15.63
NAVICULA ARVENSIS	0.00	375.00	187.50	0.00	93.75	0.00	109.38
NAVICULA CRYPTOCEPHALA	0.00	0.00	656.25	0.00	281.25	0.00	156.25
NAVICULA CINCTA	0.00	187.50	93.75	93.75	562.50	0.00	156.25
NAVICULA CRYPTOCEPHALA VAR. VENETA	937.50	562.50	0.00	937.50	281.25	468.75	531.25
NAVICULA ELGINENSIS	0.00	0.00	0.00	0.00	0.00	93.75	15.63
NAVICULA HALOPHILA	187.50	187.50	0.00	0.00	0.00	0.00	62.50
NAVICULA HEUFLERI	281.25	187.50	187.50	562.50	562.50	0.00	296.88
NAVICULA LANCEOLATA	0.00	0.00	0.00	187.50	0.00	0.00	31.25
NAVICULA LUZONENSIS	0.00	0.00	562.50	0.00	0.00	0.00	93.75
NAVICULA MENISCULUS	0.00	93.75	0.00	937.50	187.50	0.00	203.13
NAVICULA MINIMA	0.00	187.50	375.00	0.00	93.75	0.00	109.38
NAVICULA MUTICA	281.25	93.75	0.00	0.00	0.00	0.00	62.50
NAVICULA NOTHA	187.50	0.00	93.75	0.00	93.75	0.00	62.50
NAVICULA PELLICULOSA	468.75	3187.50	4875.00	937.50	1031.25	1406.25	1984.38

APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION CG-1 IN 1982

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
NAVICULA PUPULA	0.00	0.00	0.00	93.75	93.75	0.00	31.25
NAVICULA PYGMAEA	0.00	0.00	0.00	0.00	93.75	0.00	15.63
NAVICULA SECRETA VAR. APICULATA	3843.75	5250.00	3656.25	2906.25	2343.75	468.75	3078.13
NAVICULA SPECIES	0.00	0.00	0.00	0.00	0.00	93.75	15.63
NAVICULA VIRIDULA	6281.25	5156.25	3656.25	375.00	0.00	3187.50	3109.38
NITZSCHIA ACICULARIS	187.50	187.50	0.00	0.00	0.00	0.00	62.50
NITZSCHIA COMMUNIS	562.50	1406.25	562.50	843.75	468.75	93.75	656.25
NITZSCHIA FRUSTULUM	4781.25	2625.00	1125.00	3843.75	10875.00	1875.00	4187.50
NITZSCHIA HOLSTATICA	0.00	93.75	0.00	0.00	0.00	0.00	15.63
NITZSCHIA HUNGARICA	187.50	0.00	187.50	750.00	0.00	0.00	187.50
NITZSCHIA LINEARIS	1593.75	4312.50	4687.50	1125.00	1031.25	375.00	2187.50
NITZSCHIA MICROCEPHALA	0.00	0.00	187.50	0.00	0.00	0.00	31.25
NITZSCHIA PALEA	1312.50	3000.00	1312.50	3187.50	1968.75	3750.00	2421.88
NITZSCHIA PALEACEA	0.00	187.50	93.75	0.00	0.00	0.00	46.88
NITZSCHIA ROMANA	0.00	1125.00	0.00	187.50	375.00	187.50	312.50
NITZSCHIA SPECIES	0.00	0.00	0.00	187.50	0.00	0.00	31.25
RHOPALODIA GIBBA	0.00	0.00	0.00	93.75	0.00	0.00	15.63
RHOPALODIA MUSCULUS	0.00	0.00	93.75	0.00	0.00	0.00	15.63
SURIRELLA ANGUSTATA	0.00	187.50	0.00	0.00	0.00	0.00	31.25
SURIRELLA LINEARIS	93.75	93.75	0.00	0.00	0.00	0.00	31.25
SURIRELLA OVALIS	93.75	656.25	0.00	1125.00	468.75	0.00	390.63
SURIRELLA OVATA	1500.00	1406.25	281.25	468.75	0.00	0.00	609.38
SYNEDRA ACUS	0.00	0.00	0.00	187.50	0.00	0.00	31.25
SYNSDRA FASCICULATA	93.75	0.00	0.00	0.00	0.00	0.00	15.63
PHORMIDIUM SPECIES	2062.50	3375.00	656.25	1218.75	0.00	25312.50	5437.50
SPIROGYRA SPECIES	93.75	0.00	375.00	0.00	468.75	0.00	156.25
ULOTHRIX ZONATA	14343.75	0.00	0.00	0.00	0.00	0.00	2390.63
VAUCHERIA SPECIES	2531.25	0.00	0.00	0.00	0.00	0.00	421.88
TOTAL DENSITY	84000.00	51937.50	47062.50	95906.25	49218.75	112219	73390.63

DIVERSITY INDEX CALCULATIONS

SHANNON INDEX = 2.807
SPECIES EVENNESS = .1506
SPECIES RICHNESS = 73

APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION YC-2 IN 1982

SEASON = SUMMER
SAMPLE DATE = 19JUL82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
ANABAENA SPECIES	93.75	3750.00	937.50	0.00	6750.00	2531.25	2343.75
BULBOCHAETA SPECIES	16781.25	41812.50	25031.25	17531.25	48375.00	38250.00	31296.88
CYCLOTELLA MENEGHINIANA	7312.50	3375.00	2437.50	6187.50	1500.00	1406.25	3703.13
THALASSIOSIRA FLUVIATILIS	3750.00	2062.50	1312.50	656.25	750.00	0.00	1421.88
DACTYLOCOCCOPSIS RAPHIDIOIDES	0.00	0.00	0.00	0.00	0.00	93.75	15.63
CLADOPHORA SPECIES	0.00	0.00	1125.00	0.00	0.00	0.00	187.50
MERISMOPEDIA SPECIES	0.00	0.00	0.00	0.00	0.00	375.00	62.50
OOCYSTIS SPECIES	0.00	0.00	0.00	93.75	0.00	0.00	15.63
OSCILLATORIA SPECIES	937.50	0.00	281.25	0.00	0.00	0.00	203.13
ACHNANTHES AFFINIS	281.25	750.00	656.25	468.75	1312.50	750.00	703.13
ACHNANTHES LANCEOLATA VAR. DUBIA	0.00	468.75	93.75	0.00	0.00	843.75	234.38
ACHNANTHES HAUCKIANA VAR. ROSTRATA	2531.25	1312.50	3468.75	468.75	1031.25	1875.00	1781.25
ACHNANTHES MICROCEPHALA	0.00	0.00	0.00	0.00	187.50	0.00	31.25
ACHNANTHES MINUTISSIMA	93.75	93.75	0.00	0.00	281.25	93.75	93.75
AMPHORA VENETA	0.00	0.00	0.00	0.00	0.00	93.75	15.63
COCCONEIS PEDICULUS	93.75	93.75	0.00	93.75	0.00	93.75	62.50
COCCONEIS PLACENTULA	187.50	93.75	0.00	375.00	281.25	375.00	218.75
CYMBELLA MINUTA	0.00	0.00	1031.25	0.00	0.00	0.00	171.88
CYMBELLA MINUTA VAR. SILESIACA	2437.50	4406.25	0.00	1218.75	1218.75	2250.00	1921.88
ENTOMONEIS PALUDOSA	187.50	93.75	0.00	468.75	187.50	0.00	156.25
EPITHEMIA TURGIDA	187.50	0.00	0.00	93.75	0.00	0.00	46.88
FRAGILARIA CAPUCINA	0.00	281.25	93.75	187.50	187.50	0.00	125.00
FRAGILARIA PINNATA	0.00	0.00	0.00	93.75	0.00	0.00	15.63
GOMPHONEMA ANGUSTATUM	93.75	0.00	0.00	0.00	0.00	0.00	15.63
GOMPHONEMA SUBCLAVATUM	187.50	93.75	0.00	0.00	0.00	0.00	46.88
GYROSIGMA SPENCERII	0.00	1125.00	0.00	0.00	0.00	0.00	187.50
PINNULARIA BREBISSONII	375.00	0.00	0.00	0.00	0.00	0.00	62.50
PLEUROSIGMA DELICATULUM	1781.25	1875.00	2062.50	3937.50	468.75	3000.00	2187.50
NAVICULA ARVENSIS	0.00	93.75	187.50	0.00	0.00	281.25	93.75
NAVICULA CRYPTOCEPHALA	0.00	93.75	0.00	93.75	0.00	0.00	31.25
NAVICULA CINCTA	0.00	0.00	0.00	187.50	0.00	0.00	31.25
NAVICULA CRYPTOCEPHALA VAR. VENETA	281.25	187.50	750.00	750.00	0.00	750.00	453.13
NAVICULA HALOPHILA	0.00	93.75	0.00	187.50	0.00	281.25	93.75
NAVICULA HEUFLERI	0.00	187.50	0.00	93.75	0.00	0.00	46.88
NAVICULA LANCEOLATA	0.00	0.00	0.00	93.75	0.00	0.00	15.63
NAVICULA MINIMA	0.00	0.00	93.75	0.00	0.00	0.00	15.63
NAVICULA NOTHA	0.00	0.00	0.00	93.75	0.00	93.75	31.25
NAVICULA PELLICULOSA	0.00	0.00	0.00	0.00	0.00	281.25	46.88
NAVICULA TRIPUNCTATA VAR. SCHIZONE	0.00	0.00	0.00	0.00	0.00	93.75	15.63
NAVICULA VIRIDULA VAR. AVENACEA	0.00	187.50	0.00	375.00	0.00	0.00	93.75
NAVICULA VIRIDULA	0.00	0.00	187.50	0.00	0.00	0.00	31.25
NAVICULA VIRIDULA VAR. VIRIDULA	0.00	93.75	0.00	187.50	0.00	468.75	125.00
NITZSCHIA ACICULARIS	750.00	281.25	281.25	187.50	0.00	93.75	265.63
NITZSCHIA COMMUNIS	468.75	187.50	937.50	375.00	0.00	468.75	406.25
NITZSCHIA DENTICULA	93.75	0.00	0.00	0.00	0.00	0.00	15.63

APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION YC-3 IN 1982

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
NITZSCHIA HUNGARICA	375.00	281.25	1875.00	562.50	375.00	281.25	625.00
NITZSCHIA IGNORATA	0.00	0.00	93.75	0.00	0.00	0.00	15.63
NITZSCHIA INCONSPICUA	1968.75	3375.00	4781.25	6000.00	6843.75	4781.25	4625.00
NITZSCHIA LATENS	187.50	0.00	0.00	0.00	0.00	0.00	31.25
NITZSCHIA LINEARIS	375.00	93.75	187.50	187.50	0.00	0.00	140.63
NITZSCHIA MICROCEPHALA	93.75	1125.00	281.25	0.00	468.75	656.25	437.50
NITZSCHIA PALEA	1687.50	2156.25	1968.75	2156.25	2625.00	5062.50	2609.38
NITZSCHIA PALEACEA	0.00	0.00	0.00	93.75	0.00	1031.25	187.50
NITZSCHIA ROMANA	468.75	187.50	0.00	468.75	281.25	187.50	265.63
NITZSCHIA SPECIES	0.00	375.00	93.75	0.00	0.00	0.00	78.13
RHOPALODIA GIBBA	93.75	93.75	0.00	0.00	0.00	281.25	78.13
RHOPALODIA MUSCULUS	1031.25	0.00	562.50	562.50	187.50	468.75	468.75
SURIRELLA LINEARIS	93.75	187.50	0.00	93.75	0.00	0.00	62.50
SURIRELLA OVALIS	2343.75	937.50	1875.00	1968.75	1500.00	1406.25	1671.88
SURIRELLA OVATA	0.00	93.75	562.50	187.50	281.25	0.00	187.50
SYNEDRA PULCHELLA VAR. LANCEOLATA	1125.00	9750.00	2625.00	1218.75	1218.75	281.25	2703.13
SYNEDRA ULNA	0.00	0.00	0.00	93.75	0.00	0.00	15.63
SPIROGYRA SPECIES	0.00	1125.00	2906.25	0.00	0.00	0.00	671.88
STIGEOCLONIUM TENUE	187.50	0.00	0.00	0.00	0.00	0.00	31.25
TOTAL DENSITY	139500	137906	114375	99000.00	124125	83906.25	116469

DIVERSITY INDEX CALCULATIONS

SHANNON INDEX = 1.908
SPECIES EVENNESS = .1057
SPECIES RICHNESS = 64

APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION CG-1 IN 1982

SEASON = FALL
SAMPLE DATE = 05OCT82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
ANABAENA SPECIES	0.00	0.00	93.75	0.00	0.00	0.00	15.63
BATRACHOSPERMUM SPECIES	14906.25	4031.25	0.00	93.75	1218.75	0.00	3375.00
CYCLOTELLA MENEGHINIANA	1031.25	1875.00	187.50	93.75	0.00	0.00	531.25
CLADOPHORA GLOMERATA	0.00	0.00	7781.25	0.00	0.00	0.00	1296.88
ACHNANTHES AFFINIS	6093.75	6843.75	5906.25	7781.25	3093.75	9656.25	6562.50
ACHNANTHES LANCEOLATA VAR. DUBIA	562.50	562.50	4875.00	468.75	5062.50	93.75	1937.50
ACHNANTHES MINUTISSIMA	25968.75	7125.00	12562.50	13687.50	24000.00	18281.25	16937.50
AMPHORA PERPUSILLA	0.00	0.00	0.00	0.00	0.00	187.50	31.25
CYMBELLA CYMBIFORMIS VAR. NONPUNCT	0.00	187.50	0.00	0.00	0.00	0.00	31.25
CYMBELLA MINUTA	0.00	0.00	0.00	93.75	0.00	0.00	15.63
CYMBELLA MINUTA VAR. SILESIACA	0.00	562.50	93.75	0.00	0.00	0.00	109.38
DIATOMA VULGARE	0.00	0.00	0.00	93.75	0.00	0.00	15.63
FRAGILARIA VAUCHERIAE	0.00	93.75	93.75	0.00	0.00	0.00	31.25
GOMPHONEMA ANGUSTATUM	187.50	468.75	0.00	93.75	0.00	0.00	125.00
GOMPHONEMA PARVULUM	0.00	93.75	0.00	0.00	0.00	0.00	15.63
GYROSIGMA SPENCERII	0.00	0.00	0.00	93.75	0.00	0.00	15.63
NAVICULA AURICULATA	93.75	187.50	0.00	0.00	0.00	0.00	46.88
NAVICULA CINCTA	0.00	0.00	187.50	93.75	0.00	0.00	46.88
NAVICULA CRYPTOCEPHALA VAR. VENETA	4218.75	1218.75	7593.75	2343.75	2531.25	656.25	3093.75
NAVICULA HALOPHILA	0.00	1312.50	281.25	656.25	0.00	0.00	375.00
NAVICULA HEUFLERI	0.00	93.75	93.75	375.00	0.00	0.00	93.75
NAVICULA MINIMA	0.00	187.50	0.00	0.00	0.00	0.00	31.25
NAVICULA MINUSCULA	0.00	24000.00	1875.00	18375.00	11906.25	17437.50	12265.63
NAVICULA NOTHA	0.00	187.50	0.00	0.00	187.50	0.00	62.50
NAVICULA SECRETA VAR. APICULATA	3375.00	1312.50	12656.25	1218.75	2343.75	281.25	3531.25
NAVICULA VIRIDULA	0.00	843.75	468.75	187.50	0.00	0.00	250.00
NITZSCHIA ACICULARIS	0.00	0.00	0.00	93.75	0.00	0.00	15.63
NITZSCHIA COMMUNIS	93.75	93.75	0.00	0.00	0.00	0.00	31.25
NITZSCHIA DENTICULA	93.75	0.00	0.00	0.00	0.00	0.00	15.63
NITZSCHIA FRUSTULUM	4312.50	1875.00	468.75	937.50	937.50	375.00	1484.38
NITZSCHIA HUNGARICA	0.00	0.00	0.00	0.00	0.00	93.75	15.63
NITZSCHIA LINEARIS	0.00	0.00	93.75	0.00	187.50	0.00	46.88
NITZSCHIA PALEA	281.25	468.75	93.75	187.50	281.25	375.00	281.25
NITZSCHIA SPECIES	0.00	93.75	93.75	0.00	0.00	0.00	31.25
RHOPALODIA GIBBA	562.50	93.75	0.00	0.00	0.00	0.00	109.38
RHOPALODIA MUSCULUS	93.75	0.00	0.00	0.00	0.00	0.00	15.63
SURIRELLA OVALIS	93.75	93.75	0.00	93.75	0.00	0.00	46.88
SURIRELLA OVATA	93.75	0.00	0.00	0.00	0.00	0.00	15.63
SYNEDRA ACUS	187.50	0.00	281.25	0.00	0.00	0.00	78.13
SYNEDRA PULCHELLA VAR. LANCEOLATA	0.00	93.75	0.00	0.00	0.00	0.00	15.63
SYNSDRA FASCICULATA	0.00	0.00	187.50	0.00	0.00	0.00	31.25
SYNEDRA MINUSCULA	0.00	0.00	93.75	0.00	0.00	281.25	62.50
PHORMIDIUM SPECIES	1593.75	937.50	5343.75	187.50	0.00	656.25	1453.13
SPIROGYRA SPECIES	0.00	281.25	1781.25	0.00	0.00	0.00	343.75
ULOTHRIX ZONATA	0.00	0.00	187.50	0.00	0.00	0.00	31.25

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APPENDIX      . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION CG-1 IN 1982

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       . TAXONOMIC NAME                  REP. #1        REP. #2        REP. #3         REP. #4        REP. #5         REP. #6   MEAN REP
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TOTAL DENSITY                    ,    63843.75       55218.75       63375.00       47250.00       51750.00        48375.00    54968.75
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    DIVERSITY INDEX CALCULATIONS
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    SHANNON INDEX    =  2.181
    SPECIES EVENNESS =  .1319
    SPECIES RICHNESS =     45
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APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION YC-1 IN 1982

SEASON = FALL
SAMPLE DATE = 05OCT82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
ANABAENA SPECIES	187.50	0.00	0.00	0.00	187.50	0.00	62.50
BATRACHOSPERMUM SPECIES	0.00	[illegible]	375.00	281.25	0.00	281.25	281.25
BULBOCHAETA SPECIES	0.00	0.00	0.00	0.00	375.00	0.00	62.50
CYCLOTELLA MENEGHINIANA	562.50	562.50	468.75	281.25	187.50	562.50	437.50
CLADOPHORA GLOMERATA	0.00	0.00	0.00	1406.25	187.50	93.75	281.25
ACHNANTHES AFFINIS	750.00	281.25	281.25	375.00	281.25	562.50	421.88
ACHNANTHES LANCEOLATA VAR. DUBIA	750.00	1312.50	1125.00	937.50	1031.25	1312.50	1078.13
ACHNANTHES HAUCKIANA VAR. ROSTRATA	0.00	0.00	0.00	0.00	0.00	1031.25	171.88
ACHNANTHES MINUTISSIMA	93.75	281.25	0.00	0.00	93.75	375.00	140.63
CALONEIS AMHISBAENA	0.00	0.00	0.00	0.00	0.00	93.75	15.63
CALONEIS VENTRICOSA	0.00	0.00	0.00	0.00	187.50	0.00	31.25
COCCONEIS PLACENTULA	93.75	937.50	0.00	93.75	0.00	1125.00	375.00
CYMBELLA MINUTA	0.00	0.00	0.00	0.00	0.00	93.75	15.63
DIATOMA TENUE VAR. ELONGATUM	0.00	0.00	0.00	0.00	93.75	0.00	15.63
ENTOMONEIS PALUDOSA	0.00	0.00	0.00	0.00	93.75	93.75	31.25
FRAGILARIA CAPUCINA	750.00	8625.00	1781.25	2062.50	13687.50	5062.50	5328.13
FRAGILARIA VAUCHERIAE	0.00	187.50	93.75	93.75	0.00	0.00	62.50
GOMPHONEMA ANGUSTATUM	93.75	2343.75	937.50	281.25	1593.75	937.50	1031.25
GOMPHONEMA GRACILE	187.50	0.00	0.00	0.00	0.00	187.50	62.50
GOMPHONEMA PARVULUM	0.00	0.00	0.00	0.00	0.00	93.75	15.63
GYROSIGMA SPENCERII	0.00	187.50	93.75	187.50	187.50	281.25	156.25
HANTZSCHIA AMPHIOXYS	0.00	0.00	0.00	0.00	187.50	0.00	31.25
PINNULARIA BREBISSONII	0.00	0.00	93.75	0.00	0.00	187.50	46.88
NAVICULA ARVENSIS	0.00	0.00	0.00	0.00	0.00	93.75	15.63
NAVICULA CRYPTOCEPHALA	0.00	0.00	0.00	0.00	375.00	0.00	62.50
NAVICULA CINCTA	0.00	93.75	93.75	93.75	0.00	0.00	46.88
NAVICULA CRYPTOCEPHALA VAR. VENETA	93.75	93.75	93.75	0.00	93.75	93.75	78.13
NAVICULA HALOPHILA	93.75	0.00	0.00	93.75	281.25	375.00	140.63
NAVICULA HEUFLERI	0.00	93.75	93.75	93.75	281.25	468.75	171.88
NAVICULA MINIMA	0.00	0.00	0.00	0.00	93.75	281.25	62.50
NAVICULA MUTICA	0.00	0.00	93.75	0.00	0.00	0.00	15.63
NAVICULA NOTHA	0.00	562.50	281.25	0.00	93.75	468.75	234.38
NAVICULA PELLICULOSA	0.00	0.00	0.00	1031.25	0.00	0.00	171.88
NAVICULA SECRETA VAR. APICULATA	0.00	0.00	0.00	0.00	93.75	0.00	15.63
NAVICULA TRIPUNCTATA VAR. SCHIZONE	0.00	0.00	93.75	0.00	0.00	0.00	15.63
NAVICULA VIRIDULA	93.75	187.50	0.00	0.00	0.00	0.00	46.88
NITZSCHIA COMMUNIS	187.50	93.75	1125.00	1031.25	93.75	843.75	562.50
NITZSCHIA DENTICULA	0.00	187.50	93.75	0.00	0.00	93.75	62.50
NITZSCHIA FRUSTULUM	25031.25	18656.25	31593.75	25781.25	9562.50	16875.00	21250.00
NITZSCHIA HUNGARICA	1875.00	562.50	562.50	281.25	656.25	1781.25	953.13
NITZSCHIA IGNORATA	0.00	0.00	0.00	0.00	93.75	0.00	15.63
NITZSCHIA INCONSPICUA	281.25	1312.50	1312.50	6750.00	4781.25	1312.50	2625.00
NITZSCHIA LINEARIS	93.75	187.50	0.00	0.00	281.25	375.00	156.25
NITZSCHIA MICROCEPHALA	11625.00	6937.50	7593.75	6562.50	7781.25	4781.25	7546.88
NITZSCHIA PALEA	2625.00	2250.00	7781.25	2906.25	3000.00	4500.00	3843.75

APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION YC-1 IN 1982

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
NITZSCHIA ROMANA	0.00	281.25	0.00	0.00	0.00	281.25	93.75
RHOPALODIA GIBBA	375.00	843.75	93.75	0.00	0.00	750.00	343.75
RHOPALODIA MUSCULUS	468.75	468.75	0.00	281.25	468.75	468.75	359.38
SURIRELLA LINEARIS	281.25	0.00	0.00	93.75	375.00	0.00	125.00
SURIRELLA OVALIS	0.00	0.00	0.00	0.00	93.75	93.75	31.25
SURIRELLA OVATA	281.25	0.00	93.75	0.00	0.00	0.00	62.50
SYNEDRA ACUS	93.75	0.00	0.00	0.00	93.75	187.50	62.50
SYNEDRA PULCHELLA VAR. LANCEOLATA	187.50	281.25	0.00	0.00	468.75	93.75	171.88
SYNSDRA FASCICULATA	0.00	0.00	0.00	0.00	0.00	93.75	15.63
SYNEDRA MINUSCULA	0.00	0.00	0.00	0.00	0.00	1031.25	171.88
SYNEDRA ULNA	0.00	0.00	93.75	0.00	0.00	0.00	15.63
PHORMIDIUM SPECIES	93.75	281.25	0.00	0.00	0.00	281.25	109.38
SPIROGYRA SPECIES	375.00	0.00	0.00	0.00	0.00	0.00	62.50
TOTAL DENSITY	47625.00	48843.75	56343.75	51000.00	47437.50	48000.00	49875.00

DIVERSITY INDEX CALCULATIONS

SHANNON INDEX = 2.169
SPECIES EVENNESS = .1230
SPECIES RICHNESS = 58

APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION YC-2 IN 1982

SEASON = FALL
SAMPLE DATE = 04OCT82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
ANABAENA SPECIES	0.00	375.00	93.75	93.75	375.00	0.00	156.25
BULBOCHAETA SPECIES	58593.75	35250.00	79031.25	40968.75	47062.50	39656.25	50093.75
CYCLOTELLA MENEGHINIANA	562.50	843.75	93.75	187.50	0.00	281.25	328.13
THALASSIOSIRA FLUVIATILIS	3000.00	1875.00	1968.75	562.50	1500.00	2437.50	1890.63
LYNGBYA SPECIES	0.00	0.00	93.75	0.00	0.00	0.00	15.63
MERISMOPEDIA SPECIES	0.00	187.50	0.00	0.00	0.00	0.00	31.25
OSCILLATORIA SPECIES	0.00	0.00	281.25	0.00	0.00	0.00	46.88
ACHNANTHES AFFINIS	0.00	0.00	375.00	1031.25	375.00	0.00	296.88
ACHNANTHES LANCEOLATA VAR. DUBIA	0.00	375.00	562.50	1125.00	0.00	1687.50	625.00
ACHNANTHES HAUCKIANA VAR. ROSTRATA	3187.50	5718.75	3656.25	1687.50	3656.25	8250.00	4359.38
ACHNANTHES MINUTISSIMA	1031.25	281.25	0.00	468.75	1125.00	656.25	593.75
AMPHORA OVALIS	0.00	0.00	0.00	0.00	0.00	93.75	15.63
COCCONEIS PEDICULUS	0.00	0.00	0.00	0.00	0.00	187.50	31.25
COCCONEIS PLACENTULA	0.00	937.50	562.50	937.50	843.75	1031.25	718.75
CYMBELLA MINUTA VAR. SILESIACA	562.50	1312.50	2718.75	750.00	1312.50	2437.50	1515.63
ENTOMONEIS PALUDOSA	0.00	0.00	0.00	0.00	187.50	0.00	31.25
FRAGILARIA CAPUCINA	0.00	187.50	0.00	93.75	93.75	187.50	93.75
FRAGILARIA VAUCHERIAE	0.00	0.00	0.00	0.00	93.75	93.75	31.25
GOMPHONEMA OLIVACIUM	0.00	0.00	0.00	93.75	0.00	0.00	15.63
GOMPHONEMA SUBCLAVATUM	0.00	0.00	0.00	93.75	93.75	0.00	31.25
GYROSIGMA SPENCERII	93.75	3843.75	1781.25	375.00	1125.00	1968.75	1531.25
HANTZSCHIA AMPHIOXYS	0.00	93.75	93.75	0.00	0.00	0.00	31.25
PINNULARIA BREBISSONII	0.00	93.75	0.00	0.00	0.00	0.00	15.63
NAVICULA ARVENSIS	0.00	0.00	0.00	656.25	937.50	0.00	265.63
NAVICULA ATOMUS	0.00	93.75	0.00	0.00	0.00	0.00	15.63
NAVICULA CRYPTOCEPHALA VAR. VENETA	0.00	375.00	0.00	93.75	0.00	93.75	93.75
NAVICULA HEUFLERI	187.50	375.00	562.50	468.75	562.50	0.00	359.38
NAVICULA LUZONENSIS	0.00	0.00	0.00	0.00	93.75	0.00	15.63
NAVICULA MINUSCULA	0.00	468.75	0.00	562.50	0.00	0.00	171.88
NAVICULA MUTICA	0.00	93.75	0.00	93.75	0.00	0.00	31.25
NAVICULA NOTHA	0.00	562.50	750.00	93.75	375.00	93.75	312.50
NAVICULA PELLICULOSA	0.00	0.00	281.25	0.00	0.00	0.00	46.88
NAVICULA PYGMAEA	0.00	0.00	0.00	93.75	0.00	0.00	15.63
NAVICULA SECRETA VAR. APICULATA	0.00	93.75	468.75	468.75	281.25	0.00	218.75
NAVICULA VIRIDULA	0.00	187.50	93.75	0.00	750.00	281.25	218.75
NITZSCHIA COMMUNIS	0.00	93.75	468.75	93.75	93.75	0.00	125.00
NITZSCHIA FRUSTULUM	23343.75	15281.25	10312.50	14718.75	19031.25	8437.50	15187.50
NITZSCHIA HUNGARICA	281.25	750.00	281.25	281.25	468.75	93.75	359.38
NITZSCHIA INCONSPICUA	6093.75	2625.00	4312.50	4031.25	1406.25	2812.50	3546.88
NITZSCHIA LINEARIS	0.00	93.75	0.00	93.75	0.00	187.50	62.50
NITZSCHIA MICROCEPHALA	0.00	937.50	468.75	281.25	1593.75	937.50	703.13
NITZSCHIA PALEA	2718.75	2062.50	8343.75	11906.25	5625.00	2062.50	5453.13
NITZSCHIA ROMANA	0.00	93.75	0.00	0.00	93.75	0.00	31.25
NITSCHIA TRYBLIONELLA VAR. LEVIDEN	0.00	0.00	0.00	0.00	93.75	0.00	15.63
RHOICOSPHENIA CURVATA	468.75	1125.00	656.25	2250.00	281.25	562.50	890.63

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APPENDIX       . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION YC-2 IN 1982

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         TAXONOMIC NAME                 REP. #1        REP. #2       REP. #3         REP. #4       REP. #5         REP. #6   MEAN REP
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RHOPALODIA GIBBA                       1312.50        1031.25       1875.00           93.75       7125.00         4968.75    2734.38
RHOPALODIA MUSCULUS                    3375.00        2531.25       6843.75         1593.75       1031.25         5812.50    3531.25
SURIRELLA OVALIS                          0.00         375.00         93.75            0.00          0.00            0.00      78.13
SURIRELLA OVATA                           0.00           0.00          0.00            0.00          0.00          187.50      31.25
SYNEDRA ACUS                              0.00          93.75          0.00            0.00          0.00            0.00      15.63
SYNEDRA PULCHELLA VAR. LANCEOLATA       750.00         375.00        187.50            0.00        187.50           93.75     265.63
SYNSDRA FASCICULATA                       0.00          93.75        281.25          187.50        281.25          468.75     218.75
SYNEDRA ULNA                              0.00         187.50          0.00            0.00          0.00            0.00      31.25
SYNEDRA ULNA                              0.00           0.00          0.00           93.75          0.00          187.50      46.88
PHORMIDIUM SPECIES                        0.00           0.00          0.00            0.00        281.25            0.00      46.88
STIGEOCLONIUM TENUE                       0.00           0.00          0.00           93.75       1312.50            0.00     234.38
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TOTAL DENSITY                          105563       81375.00        127594        86718.75      99750.00        86250.00   97875.00
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    DIVERSITY INDEX CALCULATIONS
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    SHANNON INDEX     =  1.945
    SPECIES EVENNESS =  .1113
    SPECIES RICHNESS =     56
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APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION YC-3 IN 1982

SEASON = FALL
SAMPLE DATE = 05OCT82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
BULBOCHAETA SPECIES	2718.75	113344	3468.75	111375	11718.75	8812.50	41906.25
CYCLOTELLA MENEGHINIANA	281.25	1312.50	468.75	562.50	0.00	843.75	578.13
THALASSIOSIRA FLUVIATILIS	0.00	0.00	0.00	93.75	187.50	0.00	46.88
OSCILLATORIA SPECIES	0.00	187.50	0.00	187.50	0.00	0.00	62.50
ACHNANTHES AFFINIS	2625.00	2812.50	1125.00	3093.75	2343.75	2812.50	2468.75
ACHNANTHES LANCEOLATA VAR. DUBIA	0.00	0.00	281.25	93.75	0.00	0.00	62.50
ACHNANTHES EXIGUA	0.00	93.75	0.00	0.00	0.00	0.00	15.63
ACHNANTHES MINUTISSIMA	3000.00	1218.75	0.00	468.75	0.00	562.50	875.00
CYMBELLA AFFINIS	93.75	93.75	93.75	0.00	0.00	0.00	46.88
CYMBELLA MINUTA	0.00	187.50	0.00	0.00	0.00	0.00	31.25
CYMBELLA MINUTA VAR. SILESIACA	187.50	281.25	0.00	1406.25	937.50	281.25	515.63
ENTOMONEIS PALUDOSA	0.00	0.00	375.00	750.00	0.00	468.75	265.63
FRAGILARIA CAPUCINA	0.00	0.00	0.00	93.75	0.00	0.00	15.63
FRAGILARIA VAUCHERIAE	93.75	93.75	187.50	1125.00	0.00	187.50	281.25
GOMPHONEMA ANGUSTATUM	0.00	0.00	0.00	937.50	1500.00	2250.00	781.25
GOMPHONEMA SUBCLAVATUM	0.00	0.00	0.00	0.00	0.00	93.75	15.63
GYROSIGMA SPENCERII	0.00	0.00	0.00	93.75	0.00	0.00	15.63
MASTOGLOIA ELLIPTICA	0.00	0.00	93.75	0.00	0.00	0.00	15.63
NAVICULA CRYPTOCEPHALA	0.00	0.00	93.75	93.75	0.00	0.00	31.25
NAVICULA CINCTA	0.00	0.00	0.00	187.50	93.75	0.00	46.88
NAVICULA CRYPTOCEPHALA VAR. VENETA	187.50	2156.25	1781.25	1218.75	937.50	281.25	1093.75
NAVICULA HEUFLERI	0.00	0.00	0.00	2250.00	1781.25	562.50	765.63
NAVICULA MENISCULUS	0.00	0.00	0.00	0.00	468.75	0.00	78.13
NAVICULA MINIMA	93.75	0.00	1968.75	1406.25	93.75	0.00	593.75
NAVICULA MINUSCULA	93.75	0.00	1500.00	0.00	0.00	0.00	265.63
NAVICULA MUTICA	0.00	0.00	0.00	93.75	0.00	0.00	15.63
NAVICULA NOTHA	0.00	0.00	0.00	937.50	937.50	281.25	359.38
NAVICULA PELLICULOSA	0.00	0.00	0.00	0.00	93.75	0.00	15.63
NAVICULA RHYNCHOCEPHALA	0.00	0.00	0.00	93.75	0.00	0.00	15.63
NAVICULA SECRETA VAR. APICULATA	0.00	281.25	375.00	375.00	0.00	0.00	171.88
NAVICULA VIRIDULA	0.00	1687.50	937.50	0.00	0.00	0.00	437.50
NAVICULA VIRIDULA V. ROSTELLATA	0.00	0.00	0.00	187.50	0.00	0.00	31.25
NITZSCHIA COMMUNIS	3937.50	5156.25	9937.50	2250.00	11531.25	5625.00	6406.25
NITZSCHIA HUNGARICA	0.00	0.00	0.00	375.00	0.00	0.00	62.50
NITZSCHIA IGNORATA	0.00	0.00	0.00	93.75	0.00	0.00	15.63
NITZSCHIA INCONSPICUA	6750.00	4593.75	187.50	562.50	2062.50	468.75	2437.50
NITZSCHIA LINEARIS	0.00	281.25	187.50	93.75	0.00	93.75	109.38
NITZSCHIA MICROCEPHALA	2531.25	1031.25	0.00	0.00	937.50	1031.25	921.88
NITZSCHIA PALEA	1031.25	4312.50	7687.50	7781.25	11250.00	20718.75	8796.88
NITZSCHIA ROMANA	0.00	562.50	93.75	187.50	93.75	93.75	171.88
NITZSCHIA SPECIES	0.00	4500.00	3562.50	2718.75	2531.25	1781.25	2515.63
SURIRELLA LINEARIS	0.00	0.00	0.00	93.75	0.00	0.00	15.63
SURIRELLA OVALIS	0.00	843.75	93.75	937.50	0.00	1500.00	562.50
SURIRELLA OVATA	0.00	93.75	843.75	1031.25	750.00	2062.50	796.88
SYNEDRA PULCHELLA VAR. LANCEOLATA	1687.50	3468.75	9375.00	9562.50	2250.00	4406.25	5125.00

APPENDIX . PERIPHYTON DENSITY AND DIVERSITY ESTIMATES AT STATION YC-3 IN 1982

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	REP. #4	REP. #5	REP. #6	MEAN REP
SYNSDRA FASCICULATA	0.00	0.00	93.75	281.25	0.00	0.00	62.50
SYNEDRA ULNA VAR. CONTRACTA	0.00	0.00	0.00	187.50	0.00	0.00	31.25
STIGEOCLONIUM TENUE	0.00	0.00	0.00	0.00	0.00	187.50	31.25
TOTAL DENSITY	25312.50	148594	44812.50	153281	52500.00	55406.25	79984.38

DIVERSITY INDEX CALCULATIONS

SHANNON INDEX = 1.937
SPECIES EVENNESS = .1152
SPECIES RICHNESS = 48

APPENDIX 4-2.4

Duncan's Multiple Range Analyses for Periphyton Density Evaluations

```
                              RIO BLANCO OIL SHALE COMPANY
                            AQUATIC ECOLOGY MONITORING PROGRAM

                             GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=1602  MSE=3.62808
HARMONIC MEAN OF CELL SIZES=375.42

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  RPTYR

                A           5.0026    633  1982
                A
                A           4.8268    342  1981

                B           3.6672    375  1980

                C           3.2043    287  1979
```

```
                           RIO BLANCO OIL SHALE COMPANY
                        AQUATIC ECOLOGY MONITORING PROGRAM

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=1602  MSE=3.62808
HARMONIC MEAN OF CELL SIZES=338.533

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN        N  STATION

               A              4.9310      274  YC-2
               A
               A              4.8495      214  YC-1

               B              4.3287      541  CG-1

               C              3.9170      608  YC-3
```

```
                         RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM

                          GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=1602  MSE=3.62808
HARMONIC MEAN OF CELL SIZES=529.399

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  SEASON

                A            4.7843     424  FALL

                B            4.3380     641  SUMMER

                C            4.0263     572  SPRING
```

```
                           RIO BLANCO OIL SHALE COMPANY
                        AQUATIC ECOLOGY MONITORING PROGRAM
                                   STATION=CG-1

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=529  MSE=3.73918
HARMONIC MEAN OF CELL SIZES=116.163

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                 MEAN         N  RPTYR

               A                5.1583        73  1981
               A
               A                4.8593       180  1982

               B                3.9670       102  1979
               B
               B                3.6879       186  1980
```

```
                              RIO BLANCO OIL SHALE COMPANY
                           AQUATIC ECOLOGY MONITORING PROGRAM
                                     STATION=CG-1

                             GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=529  MSE=3.73918
HARMONIC MEAN OF CELL SIZES=154.962

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  SEASON

                A            4.8548     97  FALL
                A
                A            4.5719    237  SUMMER

                B            3.8037    207  SPRING
```

```
                           RIO BLANCO OIL SHALE COMPANY
                        AQUATIC ECOLOGY MONITORING PROGRAM
                                   STATION=YC-3

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=596  MSE=3.81807
HARMONIC MEAN OF CELL SIZES=134.2

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                 MEAN       N  RPTYR

               A                5.1816     155  1982
               A
               A                4.7356      79  1981

               B                3.6469     189  1980

               C                2.7837     185  1979
```

```
                                      RIO BLANCO OIL SHALE COMPANY
                                   AQUATIC ECOLOGY MONITORING PROGRAM
                                              STATION=YC-3

                                    GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=596  MSE=3.81807
HARMONIC MEAN OF CELL SIZES=183.241

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN      N   SEASON

                A              4.7225    128   FALL

                B              3.8481    279   SUMMER
                B
                B              3.4996    201   SPRING
```

APPENDIX 4-2.5

Benthic Macroinvertebrate Data
Spring, Summer, and Fall 1982

```
APPENDIX     .  BENTHIC MACROINVERTEBRATE COUNT DATA COLLECTED
                DURING THE 1982 REPORTING YEAR.

------------------------------------------------------------------------
STATION= CG-1
SAMPLING DATE= 26APR82
SAMPLING METHOD= MODIFIED HESS (ELLIPTICAL)
CONVERSION FACTOR TO THE NUMBER OF ORGANISMS / M2 = 19.2
------------------------------------------------------------------------
TAXONOMIC NAME              REP #1    REP #2    REP #3    MEAN REPLICATE
------------------------------------------------------------------------


BAETIS TRICAUDATUS DODDS    1         0         2              1.0
CHELIFERA MACGUART          0         0         1              0.3
CHIRONOMIDAE PUPAE          3         0         2              1.7
TRIBE CHIRONOMINI           1         1         0              0.7
HAPLOTAXIS GORDIOIDES       0         0         4              1.3
NAIS SPECIES                2         0         0              0.7
TRIBE ORTHODLADIINI         3         2         5              3.3
SIMULIUM SPECIES            1         0         0              0.3
FAMILY TUBIFICIDAE          3         1         2              2.0
------------------------------------------------------------------------
TOTAL SPECIES OBSERVED= 9
TOTAL COUNT                14         4        16             11.3
MEAN COUNT                1.6       0.4       1.8              1.3
```

```
APPENDIX     .  BENTHIC MACROINVERTEBRATE COUNT DATA COLLECTED
                DURING THE 1982 REPORTING YEAR.

----------------------------------------------------------------------
STATION= YC-1
SAMPLING DATE= 26APR82
SAMPLING METHOD= MODIFIED HESS (ELLIPTICAL)
CONVERSION FACTOR TO THE NUMBER OF ORGANISMS / M2 = 19.2
----------------------------------------------------------------------
TAXONOMIC NAME           REP #1    REP #2    REP #3    MEAN REPLICATE
----------------------------------------------------------------------


AGABUS SPECIES               6        24         4           11.3
BAETIS INSIGNIFICANS         2         2         0            1.3
BAETIS TRICAUDATUS DODDS    32       104        40           58.7
CHIRONOMIDAE PUPAE         132       240        58            143
HYDROPTILA SPECIES           2         0         0            0.7
PHYLUM NEMATODA              2         2         0            1.3
TRIBE ORTHODLADIINI       1470       812       370            884
PALPOMYIA GP. SPECIES MEI    0         2         0            0.7
TRIBE PENTANEURINI          70        28        10           36.0
SIMULIUM SPECIES           174      1492       250            639
TABANUS SPECIES              0         2         2            1.3
FAMILY TIPULIDAE             0         1         0            0.3
FAMILY TUBIFICIDAE          10         1         6            5.7
----------------------------------------------------------------------
TOTAL SPECIES OBSERVED= 13
TOTAL COUNT               1900      2710       740           1783
MEAN COUNT                 146       208      56.9            137
```

APPENDIX . BENTHIC MACROINVERTEBRATE COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR.

STATION= YC-2
SAMPLING DATE= 26APR82
SAMPLING METHOD= MODIFIED HESS (ELLIPTICAL)
CONVERSION FACTOR TO THE NUMBER OF ORGANISMS / M2 = 19.2

TAXONOMIC NAME	REP #1	REP #2	REP #3	MEAN REPLICATE
ACARI SPECIES	0	3	0	1.0
AGABUS SPECIES	1	0	2	1.0
AMPHIAGRION SELYS	3	1	5	3.0
ANAX WALSINGHAM	5	0	1	2.0
ARGIA SPECIES	0	1	0	0.3
BAETIS TRICAUDATUS DODDS	1	0	2	1.0
CALLIBAETIS SPECIES	1	0	0	0.3
CHIRONOMIDAE PUPAE	18	12	40	23.3
TRIBE CHIRONOMINI	4	1	8	4.3
DERONECTES SPECIES	1	0	2	1.0
ENALLAGMA SPECIES	2	3	0	1.7
HELOBDELLA STAGNALIS	34	0	14	16.0
HYALELLA AZTECA SAUSSURE	252	122	308	227
LIMNEPHILUS SPECIES	1	2	0	1.0
LYMNAEA SPECIES	27	1	7	11.7
TRIBE ORTHODLADIINI	30	35	76	47.0
PALPOMYIA GP. SPECIES MEI	8	6	0	4.7
TRIBE PENTANEURINI	12	21	24	19.0
SIMULIUM SPECIES	304	105	852	420
TABANUS SPECIES	0	1	1	0.7
TRIBE TANYTARSINI	0	0	8	2.7
FAMILY TUBIFICIDAE	826	37	192	352
TOTAL SPECIES OBSERVED= 22				
TOTAL COUNT	1530	351	1542	1141
MEAN COUNT	69.5	16.0	70.1	51.9

APPENDIX . BENTHIC MACROINVERTEBRATE COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR.

STATION= YC-3
SAMPLING DATE= 26APR82
SAMPLING METHOD= MODIFIED HESS (ELLIPTICAL)
CONVERSION FACTOR TO THE NUMBER OF ORGANISMS / M2 = 19.2

TAXONOMIC NAME	REP #1	REP #2	REP #3	MEAN REPLICATE
AGABUS SPECIES	4	1	1	2.0
BAETIS TRICAUDATUS DODDS	0	1	0	0.3
CHIRONOMIDAE PUPAE	50	30	12	30.7
DERONECTES SPECIES	2	3	0	1.7
TRIBE DIAMESINI	88	71	19	59.3
HELOBDELLA STAGNALIS	1	2	1	1.3
HYALELLA AZTECA SAUSSURE	0	2	1	1.0
PHYLUM NEMATODA	1	0	0	0.3
TRIBE ORTHODLADIINI	69	21	16	35.3
PALPOMYIA GP. SPECIES MEI	27	25	26	26.0
TRIBE PENTANEURINI	1	2	0	1.0
SIMULIUM SPECIES	4	21	7	10.7
TABANUS SPECIES	1	0	0	0.3
TRIBE TANYTARSINI	3	0	0	1.0
FAMILY THAUMALEIDAE	0	0	1	0.3
FAMILY TUBIFICIDAE	32	111	43	62.0
TOTAL SPECIES OBSERVED= 16				
TOTAL COUNT	283	290	127	233
MEAN COUNT	17.7	18.1	7.9	14.6

```
APPENDIX     .   BENTHIC MACROINVERTEBRATE COUNT DATA COLLECTED
                 DURING THE 1982 REPORTING YEAR.

----------------------------------------------------------------------
STATION= CG-1
SAMPLING DATE= 20JUL82
SAMPLING METHOD= MODIFIED HESS (ELLIPTICAL)
CONVERSION FACTOR TO THE NUMBER OF ORGANISMS / M2 = 19.2
----------------------------------------------------------------------
TAXONOMIC NAME             REP #1     REP #2     REP #3     MEAN REPLICATE
----------------------------------------------------------------------


ACARI SPECIES                   0          2          1             1.0
BAETIS INSIGNIFICANS           68         60         41            56.3
BAETIS TRICAUDATUS DODDS       20         36         38            31.3
CALLIBAETIS SPECIES             3          0          0             1.0
FAMILY CAPNIIDAE                0          0          1             0.3
CHELIFERA MACQUART              0          1          0             0.3
CHIRONOMIDAE PUPAE              2          3          3             2.7
TRIBE CHIRONOMINI               0          3          1             1.3
TRIBE CORYNONEURINI             1          0          4             1.7
DICRANOTA SPECIES               1          0          0             0.3
HAPLOTAXIS GORDIOIDES           4          3          0             2.3
HELOBDELLA STAGNALIS            2          0          0             0.7
HYDROPTILA SPECIES              0          1          0             0.3
LIMNOPHORA ROBINEAU-DESOI       3          3          4             3.3
TRIBE MACROPELOPIINI           18         46        105            56.3
NAIS SPECIES                    2          4         15             7.0
TRIBE ORTHODLADIINI             4         20         38            20.7
TRIBE PENTANEURINI              1          0          0             0.3
FAMILY PERLODIDAE               0          0          1             0.3
SIMULIUM SPECIES               83         74         69            75.3
FAMILY TUBIFICIDAE              1          8         37            15.3
ZAPADA CINCTIPES                0          0          2             0.7
----------------------------------------------------------------------
TOTAL SPECIES OBSERVED= 22
TOTAL COUNT                   213        264        360             279
MEAN COUNT                    9.7       12.0       16.4            12.7
```

```
APPENDIX      .  BENTHIC MACROINVERTEBRATE COUNT DATA COLLECTED
                 DURING THE 1982 REPORTING YEAR.

---------------------------------------------------------------------
STATION= YC-2
SAMPLING DATE= 19JUL82
SAMPLING METHOD= MODIFIED HESS (ELLIPTICAL)
CONVERSION FACTOR TO THE NUMBER OF ORGANISMS / M2 = 19.2
---------------------------------------------------------------------
TAXONOMIC NAME              REP #1    REP #2    REP #3    MEAN REPLICATE
---------------------------------------------------------------------


ACARI SPECIES                  0         0         2              0.7
AMPHIAGRION SELYS              1         0         0              0.3
ANAX WALSINGHAM                0         0         2              0.7
CALLIBAETIS SPECIES            4         8        82             31.3
CHIRONOMIDAE PUPAE             3         1         8              4.0
TRIBE CHIRONOMINI             23        12        30             21.7
ENALLAGMA SPECIES              1         0        10              3.7
HALIPLUS SPECIES               0         0         2              0.7
HELOBDELLA STAGNALIS          12        16        26             18.0
HYALELLA AZTECA SAUSSURE      54        44        90             62.7
ISCHNURA SPECIES               0         0         6              2.0
LACCOBIUS SPECIES              0         0         2              0.7
LYMNAEA SPECIES                1         0         0              0.3
TRIBE MACROPELOPIINI         122        15       112             83.0
NAIS SPECIES                   9        42       110             53.7
PALPOMYIA GP. SPECIES MEI      0         1         0              0.3
TRIBE PENTANEURINI             3         2         6              3.7
SIMULIUM SPECIES               1         5         0              2.0
TABANUS SPECIES                0         1         0              0.3
TRIBE TANYTARSINI             18        22        60             33.3
FAMILY TUBIFICIDAE            60       139       404              201
---------------------------------------------------------------------
TOTAL SPECIES OBSERVED= 21
TOTAL COUNT                  312       308       952              524
MEAN COUNT                  14.9      14.7      45.3             25.0
```

APPENDIX . BENTHIC MACROINVERTEBRATE COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR.

STATION= YC-3
SAMPLING DATE= 20JUL82
SAMPLING METHOD= MODIFIED HESS (ELLIPTICAL)
CONVERSION FACTOR TO THE NUMBER OF ORGANISMS / M2 = 19.2

TAXONOMIC NAME	REP #1	REP #2	REP #3	MEAN REPLICATE
ACARI SPECIES	2	4	4	3.3
AGABUS SPECIES	3	3	4	3.3
ARGIA SPECIES	0	1	4	1.7
BAETIS TRICAUDATUS DODDS	0	1	4	1.7
CHIRONOMIDAE PUPAE	9	4	0	4.3
TRIBE CHIRONOMINI	0	4	0	1.3
DERONECTES SPECIES	3	0	2	1.7
EUPARYPHUS SPECIES	1	0	0	0.3
HEMERODROMIA SPECIES	1	0	0	0.3
HYALELLA AZTECA SAUSSURE	0	0	1	0.3
HYDROPSYCHE SPECIES	0	2	0	0.7
HYDROPTILA SPECIES	2	0	4	2.0
LACCOBIUS SPECIES	2	0	0	0.7
LIMNOPHORA ROBINEAU-DESOI	0	0	1	0.3
TRIBE MACROPELOPIINI	12	4	28	14.7
TRIBE METRIOCNEMINI	0	2	8	3.3
NAIS SPECIES	3	0	20	7.7
OPHIOGOMPHUS SEVERUS	1	0	0	0.3
TRIBE ORTHODLADIINI	5	0	0	1.7
PALPOMYIA GP. SPECIES MEI	0	0	4	1.3
TRIBE PENTANEURINI	1	3	8	4.0
SIMULIUM SPECIES	210	234	112	185
TRIBE TANYTARSINI	9	0	8	5.7
FAMILY TUBIFICIDAE	17	34	104	51.7

TOTAL SPECIES OBSERVED= 24

	REP #1	REP #2	REP #3	MEAN REPLICATE
TOTAL COUNT	281	296	316	298
MEAN COUNT	11.7	12.3	13.2	12.4

```
APPENDIX     .  BENTHIC MACROINVERTEBRATE COUNT DATA COLLECTED
                DURING THE 1982 REPORTING YEAR.

----------------------------------------------------------------------
STATION= CG-1
SAMPLING DATE= 05OCT82
SAMPLING METHOD= MODIFIED HESS (ELLIPTICAL)
CONVERSION FACTOR TO THE NUMBER OF ORGANISMS / M2 = 19.2
----------------------------------------------------------------------
TAXONOMIC NAME             REP #1    REP #2    REP #3    MEAN REPLICATE
----------------------------------------------------------------------


BAETIS INSIGNIFICANS           3         2         4              3.0
BAETIS TRICAUDATUS DODDS       9         7        21             12.3
CALLIBAETIS SPECIES            0         0         1              0.3
FAMILY CAPNIIDAE              10         2        12              8.0
CHIRONOMIDAE PUPAE             1         2         2              1.7
HYALELLA AZTECA SAUSSURE       1         1         8              3.3
ISOSOB                         2         1         2              1.7
LIMNOPHORA ROBINEAU-DESOI      1         0         0              0.3
TRIBE MACROPELOPIINI           0         4         1              1.7
TRIBE ORTHODLADIINI            1         2         3              2.0
PALPOMYIA GP. SPECIES MEI      1         0         0              0.3
SIMULIUM SPECIES               0         1         2              1.0
----------------------------------------------------------------------
TOTAL SPECIES OBSERVED= 12
TOTAL COUNT                   29        22        56             35.7
MEAN COUNT                   2.4       1.8       4.7              3.0
```

```
APPENDIX      .  BENTHIC MACROINVERTEBRATE COUNT DATA COLLECTED
                 DURING THE 1982 REPORTING YEAR.

---------------------------------------------------------------------
STATION= YC-1
SAMPLING DATE= 05OCT82
SAMPLING METHOD= MODIFIED HESS (ELLIPTICAL)
CONVERSION FACTOR TO THE NUMBER OF ORGANISMS / M2 = 19.2
---------------------------------------------------------------------
TAXONOMIC NAME             REP #1    REP #2    REP #3    MEAN REPLICATE
---------------------------------------------------------------------


CALLIBAETIS SPECIES           1         0         0           0.3
CHIRONOMIDAE PUPAE            1         3         1           1.7
TRIBE CHIRONOMINI             2         2         0           1.3
HYALELLA AZTECA SAUSSURE      1         0         1           0.7
ISCHNURA SPECIES              0         1         0           0.3
LIMNOPHORA ROBINEAU-DESOI     2         2        10           4.7
TRIBE MACROPELOPIINI          9         3         5           5.7
TRIBE METRIOCNEMINI           0         0         2           0.7
TRIBE ORTHODLADIINI           4         3         1           2.7
TRIBE PENTANEURINI            1         2         0           1.0
SIMULIUM SPECIES             45         7        29          27.0
TRIBE TANYTARSINI            10         6         2           6.0
FAMILY TUBIFICIDAE            1         0         0           0.3
---------------------------------------------------------------------
TOTAL SPECIES OBSERVED= 13
TOTAL COUNT                  77        29        51          52.3
MEAN COUNT                  5.9       2.2       3.9           4.0
```

APPENDIX . BENTHIC MACROINVERTEBRATE COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR.

STATION= YC-2
SAMPLING DATE= 04OCT82
SAMPLING METHOD= MODIFIED HESS (ELLIPTICAL)
CONVERSION FACTOR TO THE NUMBER OF ORGANISMS / M2 = 19.2

TAXONOMIC NAME	REP #1	REP #2	REP #3	MEAN REPLICATE
ACARI SPECIES	0	0	1	0.3
AMPHIAGRION SELYS	3	1	2	2.0
CALLIBAETIS SPECIES	4	2	2	2.7
TRIBE CHIRONOMINI	10	4	3	5.7
DERONECTES SPECIES	1	0	0	0.3
ENALLAGMA SPECIES	1	1	2	1.3
HALIPLUS SPECIES	1	0	0	0.3
HELOBDELLA STAGNALIS	9	19	7	11.7
HYALELLA AZTECA SAUSSURE	455	327	247	343
HYDROPTILA SPECIES	0	2	2	1.3
LIMNOPHORA ROBINEAU-DESOI	3	1	0	1.3
LYMNAEA SPECIES	0	1	0	0.3
PALPOMYIA GP. SPECIES MEI	8	8	3	6.3
SIMULIUM SPECIES	55	40	34	43.0
TRIBE TANYTARSINI	3	0	11	4.7
FAMILY TUBIFICIDAE	2	3	1	2.0
TOTAL SPECIES OBSERVED= 16				
TOTAL COUNT	555	409	315	426
MEAN COUNT	34.7	25.6	19.7	26.6

APPENDIX . BENTHIC MACROINVERTEBRATE COUNT DATA COLLECTED DURING THE 1982 REPORTING YEAR.

STATION= YC-3
SAMPLING DATE= 05OCT82
SAMPLING METHOD= MODIFIED HESS (ELLIPTICAL)
CONVERSION FACTOR TO THE NUMBER OF ORGANISMS / M2 = 19.2

TAXONOMIC NAME	REP #1	REP #2	REP #3	MEAN REPLICATE
ARGIA SPECIES	2	0	0	0.7
CHIRONOMIDAE PUPAE	1	1	3	1.7
TRIBE CHIRONOMINI	0	0	1	0.3
HELOBDELLA STAGNALIS	3	0	0	1.0
HYALELLA AZTECA SAUSSURE	1	0	0	0.3
HYDROPSYCHE SPECIES	0	1	4	1.7
TRIBE MACROPELOPIINI	3	0	5	2.7
TRIBE ORTHODLADIINI	2	5	1	2.7
PALPOMYIA GP. SPECIES MEI	0	1	0	0.3
TRIBE PENTANEURINI	0	2	0	0.7
SIMULIUM SPECIES	5	46	1	17.3
TRIBE TANYTARSINI	0	1	0	0.3
FAMILY TUBIFICIDAE	19	1	0	6.7
TOTAL SPECIES OBSERVED= 13				
TOTAL COUNT	36	58	15	36.3
MEAN COUNT	2.8	4.5	1.2	2.8

APPENDIX 4-2.6

Density and Station Occurrence of Benthic Macroinvertebrates Sampled in 1982

APPENDIX . SPECIES DENSITY AND STATION OCCURENCE FOR BENTHIC MACROINVERTEBRATES SAMPLED DURING THE SPRING SAMPLING SEASON IN 1982

TAXONOMIC NAME	SPRING CG-1 (#/M2)	YC-1 (#/M2)	YC-2 (#/M2)	YC-3 (#/M2)	SPECIES TOTAL
ACARI SPECIES	.	.	19.20	.	19.20
AGABUS SPECIES	.	217.60	19.20	38.40	275.20
AMPHIAGRION SELYS	.	.	57.60	.	57.60
ANAX WALSINGHAM	.	.	38.40	.	38.40
ARGIA SPECIES	.	.	6.40	.	6.40
BAETIS INSIGNIFICANS	.	25.60	.	.	25.60
BAETIS TRICAUDATUS DODDS	19.20	1126.40	19.20	6.40	1171.20
CALLIBAETIS SPECIES	.	.	6.40	.	6.40
CHELIFERA MACQUART	6.40	.	.	.	6.40
CHIRONOMIDAE PUPAE	32.00	2752.00	448.00	588.80	3820.80
TRIBE CHIRONOMINI	12.80	.	83.20	.	96.00
DERONECTES SPECIES	.	.	19.20	32.00	51.20
TRIBE DIAMESINI	.	.	.	1139.20	1139.20
ENALLAGMA SPECIES	.	.	32.00	.	32.00
HAPLOTAXIS GORDIOIDES	25.60	.	.	.	25.60
HELOBDELLA STAGNALIS	.	.	307.20	25.60	332.80
HYALELLA AZTECA SAUSSURE	.	.	4364.80	19.20	4384.00
HYDROPTILA SPECIES	.	12.80	.	.	12.80
LIMNEPHILUS SPECIES	.	.	19.20	.	19.20
LYMNAEA SPECIES	.	.	224.00	.	224.00
NAIS SPECIES	12.80	.	.	.	12.80
PHYLUM NEMATODA	.	25.60	.	6.40	32.00
TRIBE ORTHODLADIINI	64.00	16972.8	902.40	678.40	18617.6
PALPOMYIA GP. SPECIES MEIGEN	.	12.80	89.60	499.20	601.60
TRIBE PENTANEURINI	.	691.20	364.80	19.20	1075.20
SIMULIUM SPECIES	6.40	12262.4	8070.40	204.80	20544
TABANUS SPECIES	.	25.60	12.80	6.40	44.80
TRIBE TANYTARSINI	.	.	51.20	19.20	70.40
FAMILY THAUMALEIDAE	.	.	.	6.40	6.40
FAMILY TIPULIDAE	.	6.40	.	.	6.40
FAMILY TUBIFICIDAE	38.40	108.80	6752.00	1190.40	8089.60
TOTAL SPECIES SAMPLED=31					
TOTAL DENSITY	217.60	34240	21907.2	4480.00	60844.8
MEAN STATION DENSITY	7.02	1104.52	706.68	144.52	260.95

APPENDIX . SPECIES DENSITY AND STATION OCCURENCE FOR BENTHIC MACROINVERTEBRATES SAMPLED DURING THE SUMMER SAMPLING SEASON IN 1982

TAXONOMIC NAME	SUMMER				
	CG-1 (#/M2)	YC-1 (#/M2)	YC-2 (#/M2)	YC-3 (#/M2)	SPECIES TOTAL
ACARI SPECIES	19.20	.	12.80	64.00	96.00
AGABUS SPECIES	.	.	.	64.00	64.00
AMPHIAGRION SELYS	.	.	6.40	.	6.40
ANAX WALSINGHAM	.	.	12.80	.	12.80
ARGIA SPECIES	.	.	.	32.00	32.00
BAETIS INSIGNIFICANS	1081.60	.	.	.	1081.60
BAETIS TRICAUDATUS DODDS	601.60	.	.	32.00	633.60
CALLIBAETIS SPECIES	19.20	.	601.60	.	620.80
FAMILY CAPNIIDAE	6.40	.	.	.	6.40
CHELIFERA MACQUART	6.40	.	.	.	6.40
CHIRONOMIDAE PUPAE	51.20	.	76.80	83.20	211.20
TRIBE CHIRONOMINI	25.60	.	416.00	25.60	467.20
TRIBE CORYNONEURINI	32.00	.	.	.	32.00
DERONECTES SPECIES	.	.	.	32.00	32.00
DICRANOTA SPECIES	6.40	.	.	.	6.40
ENALLAGMA SPECIES	.	.	70.40	.	70.40
EUPARYPHUS SPECIES	.	.	.	6.40	6.40
HALIPLUS SPECIES	.	.	12.80	.	12.80
HAPLOTAXIS GORDIOIDES	44.80	.	.	.	44.80
HELOBDELLA STAGNALIS	12.80	.	345.60	.	358.40
HEMERODROMIA SPECIES	.	.	.	6.40	6.40
HYALELLA AZTECA SAUSSURE	.	.	1203.20	6.40	1209.60
HYDROPSYCHE SPECIES	.	.	.	12.80	12.80
HYDROPTILA SPECIES	6.40	.	.	38.40	44.80
ISCHNURA SPECIES	.	.	38.40	.	38.40
LACCOBIUS SPECIES	.	.	12.80	12.80	25.60
LIMNOPHORA ROBINEAU-DESOIDY	64.00	.	.	6.40	70.40
LYMNAEA SPECIES	.	.	6.40	.	6.40
TRIBE MACROPELOPIINI	1081.60	.	1593.60	281.60	2956.80
TRIBE METRIOCNEMINI	.	.	.	64.00	64.00
NAIS SPECIES	134.40	.	1030.40	147.20	1312.00
OPHIOGOMPHUS SEVERUS	.	.	.	6.40	6.40
TRIBE ORTHODLADIINI	396.80	.	.	32.00	428.80
PALPOMYIA GP. SPECIES MEIGEN	.	.	6.40	25.60	32.00
TRIBE PENTANEURINI	6.40	.	70.40	76.80	153.60
FAMILY PERLODIDAE	6.40	.	.	.	6.40
SIMULIUM SPECIES	1446.40	.	38.40	3558.40	5043.20
TABANUS SPECIES	.	.	6.40	.	6.40
TRIBE TANYTARSINI	.	.	640.00	108.80	748.80
FAMILY TUBIFICIDAE	294.40	.	3859.20	992.00	5145.60
ZAPADA CINCTIPES	12.80	.	.	.	12.80
TOTAL SPECIES SAMPLED=41					
TOTAL DENSITY	5356.80	0.00	10060.8	5715.20	21132.8
MEAN STATION DENSITY	130.65	0.00	245.39	139.40	0.31

APPENDIX . SPECIES DENSITY AND STATION OCCURENCE FOR BENTHIC MACROINVERTEBRATES SAMPLED DURING THE FALL SAMPLING SEASON IN 1982

TAXONOMIC NAME	FALL				
	CG-1 (#/M2)	YC-1 (#/M2)	YC-2 (#/M2)	YC-3 (#/M2)	SPECIES TOTAL
ACARI SPECIES	.	.	122.88	.	122.88
AMPHIAGRION SELYS	.	.	737.28	.	737.28
ARGIA SPECIES	.	.	.	245.76	245.76
BAETIS INSIGNIFICANS	1105.92	.	.	.	1105.92
BAETIS TRICAUDATUS DODDS	4546.56	.	.	.	4546.56
CALLIBAETIS SPECIES	122.88	122.88	983.04	.	1228.80
FAMILY CAPNIIDAE	2949.12	.	.	.	2949.12
CHIRONOMIDAE PUPAE	614.40	614.40	.	614.40	1843.20
TRIBE CHIRONOMINI	.	491.52	2088.96	122.88	2703.36
DERONECTES SPECIES	.	.	122.88	.	122.88
ENALLAGMA SPECIES	.	.	491.52	.	491.52
HALIPLUS SPECIES	.	.	122.88	.	122.88
HELOBDELLA STAGNALIS	.	.	4300.80	368.64	4669.44
HYALELLA AZTECA SAUSSURE	1228.80	245.76	126444	122.88	128041
HYDROPSYCHE SPECIES	.	.	.	614.40	614.40
HYDROPTILA SPECIES	.	.	491.52	.	491.52
ISCHNURA SPECIES	.	122.88	.	.	122.88
ISOSOB	614.40	.	.	.	614.40
LIMNOPHORA ROBINEAU-DESOIDY	122.88	1720.32	491.52	.	2334.72
LYMNAEA SPECIES	.	.	122.88	.	122.88
TRIBE MACROPELOPIINI	614.40	2088.96	.	983.04	3686.40
TRIBE METRIOCNEMINI	.	245.76	.	.	245.76
TRIBE ORTHODLADIINI	737.28	983.04	.	983.04	2703.36
PALPOMYIA GP. SPECIES MEIGEN	122.88	.	2334.72	122.88	2580.48
TRIBE PENTANEURINI	.	368.64	.	245.76	614.40
SIMULIUM SPECIES	368.64	9953.28	15851.5	6389.76	32563.2
TRIBE TANYTARSINI	.	2211.84	1720.32	122.88	4055.04
FAMILY TUBIFICIDAE	.	122.88	737.28	2457.60	3317.76
TOTAL SPECIES SAMPLED=28					
TOTAL DENSITY	13148.2	19292.2	157164	13393.9	202998
MEAN STATION DENSITY	469.58	689.01	5612.98	478.35	118.49

APPENDIX 4-2.7

Benthic Macroinvertebrate Density and Diversity Estimates for the 1982 Sampling Season

APPENDIX . BENTHIC MACROINVERTEBRATE DENSITY ESTIMATES AT STATION CG-1 IN 1982

SEASON = SPRING
SAMPLE DATE = 26APR82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	MEAN REP
BAETIS TRICAUDATUS DODDS	19.20	0.00	38.40	19.20
CHELIFERA MACQUART	0.00	0.00	19.20	6.40
CHIRONOMIDAE PUPAE	57.60	0.00	38.40	32.00
TRIBE CHIRONOMINI	19.20	19.20	0.00	12.80
HAPLOTAXIS GORDIOIDES	0.00	0.00	76.80	25.60
NAIS SPECIES	38.40	0.00	0.00	12.80
TRIBE ORTHODLADIINI	57.60	38.40	96.00	64.00
SIMULIUM SPECIES	19.20	0.00	0.00	6.40
FAMILY TUBIFICIDAE	57.60	19.20	38.40	38.40
TOTAL DENSITY	268.80	76.80	307.20	217.60

DIVERSITY INDEX CALCULATIONS

SHANNON INDEX = 1.955
SPECIES EVENNESS = .2048
SPECIES RICHNESS = 9

APPENDIX . BENTHIC MACROINVERTEBRATE DENSITY ESTIMATES AT STATION YC-1 IN 1982

SEASON = SPRING
SAMPLE DATE = 26APR82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	MEAN REP
AGABUS SPECIES	115.20	460.80	76.80	217.60
BAETIS INSIGNIFICANS	38.40	38.40	0.00	25.60
BAETIS TRICAUDATUS DODDS	614.40	1996.80	768.00	1126.40
CHIRONOMIDAE PUPAE	2534.40	4608.00	1113.60	2752.00
HYDROPTILA SPECIES	38.40	0.00	0.00	12.80
PHYLUM NEMATODA	38.40	38.40	0.00	25.60
TRIBE ORTHODLADIINI	28224.00	15590.40	7104.00	16972.80
PALPOMYIA GP. SPECIES ME	0.00	38.40	0.00	12.80
TRIBE PENTANEURINI	1344.00	537.60	192.00	691.20
SIMULIUM SPECIES	3340.80	28646.40	4800.00	12262.40
TABANUS SPECIES	0.00	38.40	38.40	25.60
FAMILY TIPULIDAE	0.00	19.20	0.00	6.40
FAMILY TUBIFICIDAE	192.00	19.20	115.20	108.80
TOTAL DENSITY	36480.00	52032.00	14208.00	34240.00

DIVERSITY INDEX CALCULATIONS

SHANNON INDEX = 1.183
SPECIES EVENNESS = .1062
SPECIES RICHNESS = 13

APPENDIX . BENTHIC MACROINVERTEBRATE DENSITY ESTIMATES
AT STATION YC-2 IN 1982

SEASON = SPRING
SAMPLE DATE = 26APR82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	MEAN REP
ACARI SPECIES	0.00	57.60	0.00	19.20
AGABUS SPECIES	19.20	0.00	38.40	19.20
AMPHIAGRION SELYS	57.60	19.20	96.00	57.60
ANAX WALSINGHAM	96.00	0.00	19.20	38.40
ARGIA SPECIES	0.00	19.20	0.00	6.40
BAETIS TRICAUDATUS DODDS	19.20	0.00	38.40	19.20
CALLIBAETIS SPECIES	19.20	0.00	0.00	6.40
CHIRONOMIDAE PUPAE	345.60	230.40	768.00	448.00
TRIBE CHIRONOMINI	76.80	19.20	153.60	83.20
DERONECTES SPECIES	19.20	0.00	38.40	19.20
ENALLAGMA SPECIES	38.40	57.60	0.00	32.00
HELOBDELLA STAGNALIS	652.80	0.00	268.80	307.20
HYALELLA AZTECA SAUSSURE	4838.40	2342.40	5913.60	4364.80
LIMNEPHILUS SPECIES	19.20	38.40	0.00	19.20
LYMNAEA SPECIES	518.40	19.20	134.40	224.00
TRIBE ORTHODLADIINI	576.00	672.00	1459.20	902.40
PALPOMYIA GP. SPECIES ME	153.60	115.20	0.00	89.60
TRIBE PENTANEURINI	230.40	403.20	460.80	364.80
SIMULIUM SPECIES	5836.80	2016.00	16358.40	8070.40
TABANUS SPECIES	0.00	19.20	19.20	12.80
TRIBE TANYTARSINI	0.00	0.00	153.60	51.20
FAMILY TUBIFICIDAE	15859.20	710.40	3686.40	6752.00
TOTAL DENSITY	29376.00	6739.20	29606.40	21907.20

DIVERSITY INDEX CALCULATIONS

SHANNON INDEX = 1.572
SPECIES EVENNESS = .1171
SPECIES RICHNESS = 22

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APPENDIX       . BENTHIC MACROINVERTEBRATE DENSITY ESTIMATES
                 AT STATION YC-3 IN 1982

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TAXONOMIC NAME            REP. #1        REP. #2        REP. #3        MEAN REP
-------------------------------------------------------------------------------


SEASON      =  SPRING
SAMPLE DATE =  26APR82


AGABUS SPECIES              76.80          19.20          19.20          38.40
BAETIS TRICAUDATUS DODDS     0.00          19.20           0.00           6.40
CHIRONOMIDAE PUPAE         960.00         576.00         230.40         588.80
DERONECTES SPECIES          38.40          57.60           0.00          32.00
TRIBE DIAMESINI           1689.60        1363.20         364.80        1139.20
HELOBDELLA STAGNALIS        19.20          38.40          19.20          25.60
HYALELLA AZTECA SAUSSURE     0.00          38.40          19.20          19.20
PHYLUM NEMATODA             19.20           0.00           0.00           6.40
TRIBE ORTHODLADIINI       1324.80         403.20         307.20         678.40
PALPOMYIA GP. SPECIES ME   518.40         480.00         499.20         499.20
TRIBE PENTANEURINI          19.20          38.40           0.00          19.20
SIMULIUM SPECIES            76.80         403.20         134.40         204.80
TABANUS SPECIES             19.20           0.00           0.00           6.40
TRIBE TANYTARSINI           57.60           0.00           0.00          19.20
FAMILY THAUMALEIDAE          0.00           0.00          19.20           6.40
FAMILY TUBIFICIDAE         614.40        2131.20         825.60        1190.40
-------------------------------------------------------------------------------
TOTAL DENSITY             5433.60        5568.00        2438.40        4480.00
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    DIVERSITY INDEX CALCULATIONS
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    SHANNON INDEX    =  1.852
    SPECIES EVENNESS =  .1538
    SPECIES RICHNESS =     16
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APPENDIX . BENTHIC MACROINVERTEBRATE DENSITY ESTIMATES
AT STATION CG-1 IN 1982

SEASON = SUMMER
SAMPLE DATE = 20JUL82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	MEAN REP
ACARI SPECIES	0.00	38.40	19.20	19.20
BAETIS INSIGNIFICANS	1305.60	1152.00	787.20	1081.60
BAETIS TRICAUDATUS DODDS	384.00	691.20	729.60	601.60
CALLIBAETIS SPECIES	57.60	0.00	0.00	19.20
FAMILY CAPNIIDAE	0.00	0.00	19.20	6.40
CHELIFERA MACQUART	0.00	19.20	0.00	6.40
CHIRONOMIDAE PUPAE	38.40	57.60	57.60	51.20
TRIBE CHIRONOMINI	0.00	57.60	19.20	25.60
TRIBE CORYNONEURINI	19.20	0.00	76.80	32.00
DICRANOTA SPECIES	19.20	0.00	0.00	6.40
HAPLOTAXIS GORDIOIDES	76.80	57.60	0.00	44.80
HELOBDELLA STAGNALIS	38.40	0.00	0.00	12.80
HYDROPTILA SPECIES	0.00	19.20	0.00	6.40
LIMNOPHORA ROBINEAU-DESO	57.60	57.60	76.80	64.00
TRIBE MACROPELOPIINI	345.60	883.20	2016.00	1081.60
NAIS SPECIES	38.40	76.80	288.00	134.40
TRIBE ORTHODLADIINI	76.80	384.00	729.60	396.80
TRIBE PENTANEURINI	19.20	0.00	0.00	6.40
FAMILY PERLODIDAE	0.00	0.00	19.20	6.40
SIMULIUM SPECIES	1593.60	1420.80	1324.80	1446.40
FAMILY TUBIFICIDAE	19.20	153.60	710.40	294.40
ZAPADA CINCTIPES	0.00	0.00	38.40	12.80
TOTAL DENSITY	4089.60	5068.80	6912.00	5356.80

DIVERSITY INDEX CALCULATIONS

SHANNON INDEX = 2.001
SPECIES EVENNESS = .1490
SPECIES RICHNESS = 22

APPENDIX . BENTHIC MACROINVERTEBRATE DENSITY ESTIMATES
AT STATION YC-2 IN 1982

SEASON = SUMMER
SAMPLE DATE = 19JUL82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	MEAN REP
ACARI SPECIES	0.00	0.00	38.40	12.80
AMPHIAGRION SELYS	19.20	0.00	0.00	6.40
ANAX WALSINGHAM	0.00	0.00	38.40	12.80
CALLIBAETIS SPECIES	76.80	153.60	1574.40	601.60
CHIRONOMIDAE PUPAE	57.60	19.20	153.60	76.80
TRIBE CHIRONOMINI	441.60	230.40	576.00	416.00
ENALLAGMA SPECIES	19.20	0.00	192.00	70.40
HALIPLUS SPECIES	0.00	0.00	38.40	12.80
HELOBDELLA STAGNALIS	230.40	307.20	499.20	345.60
HYALELLA AZTECA SAUSSURE	1036.80	844.80	1728.00	1203.20
ISCHNURA SPECIES	0.00	0.00	115.20	38.40
LACCOBIUS SPECIES	0.00	0.00	38.40	12.80
LYMNAEA SPECIES	19.20	0.00	0.00	6.40
TRIBE MACROPELOPIINI	2342.40	288.00	2150.40	1593.60
NAIS SPECIES	172.80	806.40	2112.00	1030.40
PALPOMYIA GP. SPECIES ME	0.00	19.20	0.00	6.40
TRIBE PENTANEURINI	57.60	38.40	115.20	70.40
SIMULIUM SPECIES	19.20	96.00	0.00	38.40
TABANUS SPECIES	0.00	19.20	0.00	6.40
TRIBE TANYTARSINI	345.60	422.40	1152.00	640.00
FAMILY TUBIFICIDAE	1152.00	2668.80	7756.80	3859.20
TOTAL DENSITY	5990.40	5913.60	18278.40	10060.80

DIVERSITY INDEX CALCULATIONS

SHANNON INDEX = 1.94
SPECIES EVENNESS = .1467
SPECIES RICHNESS = 21

APPENDIX . BENTHIC MACROINVERTEBRATE DENSITY ESTIMATES
AT STATION YC-3 IN 1982

SEASON = SUMMER
SAMPLE DATE = 20JUL82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	MEAN REP
ACARI SPECIES	38.40	76.80	76.80	64.00
AGABUS SPECIES	57.60	57.60	76.80	64.00
ARGIA SPECIES	0.00	19.20	76.80	32.00
BAETIS TRICAUDATUS DODDS	0.00	19.20	76.80	32.00
CHIRONOMIDAE PUPAE	172.80	76.80	0.00	83.20
TRIBE CHIRONOMINI	0.00	76.80	0.00	25.60
DERONECTES SPECIES	57.60	0.00	38.40	32.00
EUPARYPHUS SPECIES	19.20	0.00	0.00	6.40
HEMERODROMIA SPECIES	19.20	0.00	0.00	6.40
HYALELLA AZTECA SAUSSURE	0.00	0.00	19.20	6.40
HYDROPSYCHE SPECIES	0.00	38.40	0.00	12.80
HYDROPTILA SPECIES	38.40	0.00	76.80	38.40
LACCOBIUS SPECIES	38.40	0.00	0.00	12.80
LIMNOPHORA ROBINEAU-DESO	0.00	0.00	19.20	6.40
TRIBE MACROPELOPIINI	230.40	76.80	537.60	281.60
TRIBE METRIOCNEMINI	0.00	38.40	153.60	64.00
NAIS SPECIES	57.60	0.00	384.00	147.20
OPHIOGOMPHUS SEVERUS	19.20	0.00	0.00	6.40
TRIBE ORTHODLADIINI	96.00	0.00	0.00	32.00
PALPOMYIA GP. SPECIES ME	0.00	0.00	76.80	25.60
TRIBE PENTANEURINI	19.20	57.60	153.60	76.80
SIMULIUM SPECIES	4032.00	4492.80	2150.40	3558.40
TRIBE TANYTARSINI	172.80	0.00	153.60	108.80
FAMILY TUBIFICIDAE	326.40	652.80	1996.80	992.00
TOTAL DENSITY	5395.20	5683.20	6067.20	5715.20

DIVERSITY INDEX CALCULATIONS

SHANNON INDEX = 1.451
SPECIES EVENNESS = .1051
SPECIES RICHNESS = 24

```
APPENDIX        . BENTHIC MACROINVERTEBRATE DENSITY ESTIMATES
                  AT STATION CG-1 IN 1982

---------------------------------------------------------------------------------
TAXONOMIC NAME             REP. #1         REP. #2        REP. #3      MEAN REP
---------------------------------------------------------------------------------


SEASON      =  FALL
SAMPLE DATE =  05OCT82


BAETIS INSIGNIFICANS        57.60           38.40          76.80        1105.92
BAETIS TRICAUDATUS DODDS   172.80          134.40         403.20        4546.56
CALLIBAETIS SPECIES          0.00            0.00          19.20         122.88
FAMILY CAPNIIDAE           192.00           38.40         230.40        2949.12
CHIRONOMIDAE PUPAE          19.20           38.40          38.40         614.40
HYALELLA AZTECA SAUSSURE    19.20           19.20         153.60        1228.80
ISOSOB                      38.40           19.20          38.40         614.40
LIMNOPHORA ROBINEAU-DESO    19.20            0.00           0.00         122.88
TRIBE MACROPELOPIINI         0.00           76.80          19.20         614.40
TRIBE ORTHODLADIINI         19.20           38.40          57.60         737.28
PALPOMYIA GP. SPECIES ME    19.20            0.00           0.00         122.88
SIMULIUM SPECIES             0.00           19.20          38.40         368.64
---------------------------------------------------------------------------------
TOTAL DENSITY              556.80          422.40        1075.20       13148.16
---------------------------------------------------------------------------------

    DIVERSITY INDEX CALCULATIONS
    ----------------------------
    SHANNON INDEX     =  1.954
    SPECIES EVENNESS =  .1811
    SPECIES RICHNESS =     12
```

APPENDIX . BENTHIC MACROINVERTEBRATE DENSITY ESTIMATES
AT STATION YC-1 IN 1982

SEASON = FALL
SAMPLE DATE = 05OCT82

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	MEAN REP
CALLIBAETIS SPECIES	19.20	0.00	0.00	122.88
CHIRONOMIDAE PUPAE	19.20	57.60	19.20	614.40
TRIBE CHIRONOMINI	38.40	38.40	0.00	491.52
HYALELLA AZTECA SAUSSURE	19.20	0.00	19.20	245.76
ISCHNURA SPECIES	0.00	19.20	0.00	122.88
LIMNOPHORA ROBINEAU-DESO	38.40	38.40	192.00	1720.32
TRIBE MACROPELOPIINI	172.80	57.60	96.00	2088.96
TRIBE METRIOCNEMINI	0.00	0.00	38.40	245.76
TRIBE ORTHODLADIINI	76.80	57.60	19.20	983.04
TRIBE PENTANEURINI	19.20	38.40	0.00	368.64
SIMULIUM SPECIES	864.00	134.40	556.80	9953.28
TRIBE TANYTARSINI	192.00	115.20	38.40	2211.84
FAMILY TUBIFICIDAE	19.20	0.00	0.00	122.88
TOTAL DENSITY	1478.40	556.80	979.20	19292.16

DIVERSITY INDEX CALCULATIONS

SHANNON INDEX = 1.684
SPECIES EVENNESS = .1512
SPECIES RICHNESS = 13

APPENDIX . BENTHIC MACROINVERTEBRATE DENSITY ESTIMATES
AT STATION YC-2 IN 1982

SEASON = FALL
SAMPLE DATE = 04OCT82

TAXONCMIC NAME	REP. #1	REP. #2	REP. #3	MEAN REP
ACARI SPECIES	0.00	0.00	19.20	122.88
AMPHIAGRION SELYS	57.60	19.20	38.40	737.28
CALLIBAETIS SPECIES	76.80	38.40	38.40	983.04
TRIBE CHIRONOMINI	192.00	76.80	57.60	2088.96
DERONECTES SPECIES	19.20	0.00	0.00	122.88
ENALLAGMA SPECIES	19.20	19.20	38.40	491.52
HALIPLUS SPECIES	19.20	0.00	0.00	122.88
HELOBDELLA STAGNALIS	172.80	364.80	134.40	4300.80
HYALELLA AZTECA SAUSSURE	8736.00	6278.40	4742.40	126444
HYDROPTILA SPECIES	0.00	38.40	38.40	491.52
LIMNOPHORA ROBINEAU-DESO	57.60	19.20	0.00	491.52
LYMNAEA SPECIES	0.00	19.20	0.00	122.88
PALPOMYIA GP. SPECIES ME	153.60	153.60	57.60	2334.72
SIMULIUM SPECIES	1056.00	768.00	652.80	15851.52
TRIBE TANYTARSINI	57.60	0.00	211.20	1720.32
FAMILY TUBIFICIDAE	38.40	57.60	19.20	737.28
TOTAL DENSITY	10656.00	7852.80	6048.00	157164

DIVERSITY INDEX CALCULATIONS

SHANNON INDEX = .8327
SPECIES EVENNESS = .0692
SPECIES RICHNESS = 16

APPENDIX . BENTHIC MACROINVERTEBRATE DENSITY ESTIMATES
AT STATION YC-3 IN 1982

TAXONOMIC NAME	REP. #1	REP. #2	REP. #3	MEAN REP
SEASON = FALL				
SAMPLE DATE = 05OCT82				
ARGIA SPECIES	38.40	0.00	0.00	245.76
CHIRONOMIDAE PUPAE	19.20	19.20	57.60	614.40
TRIBE CHIRONOMINI	0.00	0.00	19.20	122.88
HELOBDELLA STAGNALIS	57.60	0.00	0.00	368.64
HYALELLA AZTECA SAUSSURE	19.20	0.00	0.00	122.88
HYDROPSYCHE SPECIES	0.00	19.20	76.80	614.40
TRIBE MACROPELOPIINI	57.60	0.00	96.00	983.04
TRIBE ORTHODLADIINI	38.40	96.00	19.20	983.04
PALPOMYIA GP. SPECIES ME	0.00	19.20	0.00	122.88
TRIBE PENTANEURINI	0.00	38.40	0.00	245.76
SIMULIUM SPECIES	96.00	883.20	19.20	6389.76
TRIBE TANYTARSINI	0.00	19.20	0.00	122.88
FAMILY TUBIFICIDAE	364.80	19.20	0.00	2457.60
TOTAL DENSITY	691.20	1113.60	288.00	13393.92

DIVERSITY INDEX CALCULATIONS

SHANNON INDEX = 1.748
SPECIES EVENNESS = .1569
SPECIES RICHNESS = 13

APPENDIX 4-2.8

Duncan's Multiple Range Analyses for Benthic Macroinvertebrate Density Evaluations

Duncan's Multiple Range Tests
for Each Station

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                                 RIO BLANCO OIL SHALE COMPANY
                              AQUATIC ECOLOGY MONITORING PROGRAM
                              BENTHIC MACROINVERTEBRATE STUDIES

                             TWO-WAY MODEL 1 ANALYSIS OF VARIANCE
                              DENSITY DATA ARE LOG10 TRANSFORMED
                                         STATION=CG-1

                               GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=129  MSE=2.29826
HARMONIC MEAN OF CELL SIZES=31.4136

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN      N  RPTYR

                A              3.7648     51  1980
                A
                A              3.5493     42  1982
                A
        B       A              3.0952     26  1979
        B
        B                      2.5829     22  1981
```

```
                                                RIO BLANCO OIL SHALE COMPANY
                                             AQUATIC ECOLOGY MONITORING PROGRAM
                                             BENTHIC MACROINVERTEBRATE STUDIES

                                            TWO-WAY MODEL 1 ANALYSIS OF VARIANCE
                                             DENSITY DATA ARE LOG10 TRANSFORMED
                                                        STATION=CG-1

                                               GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=129  MSE=2.29826
HARMONIC MEAN OF CELL SIZES=45.1639

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN      N  SEASON

                A             3.7276     61  SUMMER
                A
        B       A             3.4099     39  FALL
        B
        B                     2.8781     41  SPRING
```

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                                  RIO BLANCO OIL SHALE COMPANY
                               AQUATIC ECOLOGY MONITORING PROGRAM
                               BENTHIC MACROINVERTEBRATE STUDIES

                              TWO-WAY MODEL 1 ANALYSIS OF VARIANCE
                               DENSITY DATA ARE LOG10 TRANSFORMED
                                          STATION=YC-1

                                GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=57  MSE=3.7205
HARMONIC MEAN OF CELL SIZES=9.40299

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  SEASON

                A            4.5832     28  SPRING
                A
        B       A            3.5811     30  FALL
        B
        B                    2.0296      4  SUMMER
```

Duncan's Multiple Range Test for Major Taxonomic Orders

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                          RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM


           THREE-WAY MODEL 1 ANALYSIS OF VARIANCE WITHOUT INTERACTION
                       DENSITY DATA ARE LOG10 TRANSFORMED
                            ORDER=CLASS OLIGOCHAETA

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=38  MSE=2.24284
HARMONIC MEAN OF CELL SIZES=11.5717

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN       N  RPTYR

               A               5.6269      10  1981
               A
               A               5.3440      14  1982

               B               3.4425      12  1980
               B
               B               3.3930      11  1979
```

```
                        RIO BLANCO OIL SHALE COMPANY
                      AQUATIC ECOLOGY MONITORING PROGRAM


            THREE-WAY MODEL 1 ANALYSIS OF VARIANCE WITHOUT INTERACTION
                      DENSITY DATA ARE LOG10 TRANSFORMED
                           ORDER=CLASS OLIGOCHAETA

                       GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=38  MSE=2.24284
HARMONIC MEAN OF CELL SIZES=8.65979

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  STATION

               A             6.8300       7  YC-2

               B             4.5908      14  YC-3
               B
               B             4.5344       5  YC-1
               B
               B             3.5698      21  CG-1
```

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                          RIO BLANCO OIL SHALE COMPANY
                       AQUATIC ECOLOGY MONITORING PROGRAM


           THREE-WAY MODEL 1 ANALYSIS OF VARIANCE WITHOUT INTERACTION
                       DENSITY DATA ARE LOG10 TRANSFORMED
                             ORDER=ORDER COLEOPTERA

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=27  MSE=1.28307
HARMONIC MEAN OF CELL SIZES=8.08989

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  RPTYR

               A             3.4900      12  1982
               A
       B       A             2.8818      10  1981
       B       A
       B       A             2.4919       5  1979
       B
       B                     2.0554       9  1980
```

```
                 THREE-WAY MODEL 1 ANALYSIS OF VARIANCE WITHOUT INTERACTION
                              DENSITY DATA ARE LOG10 TRANSFORMED
                                    ORDER=ORDER TRICOPTERA

                               GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=16  MSE=0.659913
HARMONIC MEAN OF CELL SIZES=3.73333

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN    GROUPING                MEAN       N  RPTYR

                A               3.9596       3  1980
                A
        B       A               2.8118      14  1982
        B
        B                       2.2029       2  1979
        B
        B                       2.0394       6  1981
```

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                    RIO BLANCO OIL SHALE COMPANY
                  AQUATIC ECOLOGY MONITORING PROGRAM


      THREE-WAY MODEL 1 ANALYSIS OF VARIANCE WITHOUT INTERACTION
                  DENSITY DATA ARE LOG10 TRANSFORMED
                      ORDER=FAMILY CHIRONOMIDAE

                   GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=139  MSE=2.13328
HARMONIC MEAN OF CELL SIZES=35.345

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN      N  RPTYR

                 A            4.5043     52  1982
                 A
                 A            4.4003     33  1980
                 A
         B       A            3.9281     30  1979
         B
         B                    3.4634     33  1981
```

```
                      RIO BLANCO OIL SHALE COMPANY
                    AQUATIC ECOLOGY MONITORING PROGRAM


          THREE-WAY MODEL 1 ANALYSIS OF VARIANCE WITHOUT INTERACTION
                    DENSITY DATA ARE LOG10 TRANSFORMED
                        ORDER=FAMILY CHIRONOMIDAE

                     GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=139  MSE=2.13328
HARMONIC MEAN OF CELL SIZES=49.2737

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  SEASON

               A             4.5589     51  SPRING
               A
       B       A             4.1775     50  SUMMER
       B
       B                     3.6210     47  FALL
```

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                    RIO BLANCO OIL SHALE COMPANY
                 AQUATIC ECOLOGY MONITORING PROGRAM


      THREE-WAY MODEL 1 ANALYSIS OF VARIANCE WITHOUT INTERACTION
                 DENSITY DATA ARE LOG10 TRANSFORMED
                     ORDER=FAMILY CHIRONOMIDAE

                  GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: LOG_DEN
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=139  MSE=2.13328
HARMONIC MEAN OF CELL SIZES=29.0022

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  STATION

                A            4.6378     19  YC-1
                A
                A            4.5964     21  YC-2
                A
                A            4.2848     61  YC-3

                B            3.5224     47  CG-1
```

APPENDIX 5-0

Hydrology Studies

APPENDIX 5-1.1

1982 Water Quality Data Listing

- o Alluvial Aquifers
- o Development Activities Monitoring
- o Springs and Seeps
- o Upper Aquifer

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                                          RIO BLANCO OIL SHALE COMPANY
                                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                                         WATER CHEMISTRY DATA - TRACT C-A

------------------------------------ REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S22 -------------------------------------

 OBS    DATE     PH   SPC_COND   TDS    TSS   ALK    CA   MG     K    NA   HCO3    CO3     CL    NO2   SO4    F    NH3    PO4    B     SIO2

  1   29JAN82   7.8     2225     1853    75   559    78  161   2.3   270   659    -0.01   27.2    .    872  0.47  1.42  0.21  0.46    24
  2   21OCT82    .        .      1928   162   614   100  160   3.0   300   724    -0.01   26.4    .    912  0.50  0.50  0.04  0.40    24

 OBS  FE   DOC    AS      SE      V     MOL     HG    AL   BA   BE   BI   BR   CD   CR   CU   GA   GE   PB   LI   MN   NI   SR   TI   ZN   ZR   ALPHA   BETA

  1    .    9   -0.01   -0.01   -0.5   -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .     .      .
  2    .    5   -0.01   -0.01   -0.1   -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .     .      .


------------------------------------ REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S23D ------------------------------------

 OBS    DATE     PH   SPC_COND   TDS    TSS   ALK   CA   MG     K     NA   HCO3    CO3     CL    NO2   SO4    F    NH3   PO4    B     SIO2

  3   27JAN82   7.6     1600     1314   388   501   87  110   0.86   170   588    -0.01   20.1    .    529  0.36  0.56  0.25  0.05    22

 OBS  FE   DOC    AS      SE      V     MOL     HG    AL   BA   BE   BI   BR   CD   CR   CU   GA   GE   PB   LI   MN   NI   SR   TI   ZN   ZR   ALPHA   BETA

  3    .    7   -0.01   -0.01   -0.5   -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .     .      .


------------------------------------ REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S24 -------------------------------------

 OBS    DATE     PH   SPC_COND   TDS    TSS    ALK   CA    MG     K     NA   HCO3    CO3     CL    NO2   SO4    F     NH3     PO4    B     SIO2

  4   27JAN82   7.6     1850     1386   2358   524  100   120   1.43   160   615    -0.01   18.4    .    587  0.38  1.24    0.30  0.12    20
  5   20APR82   7.2     1700     1210     13   554  130    97   0.44   170   641    -0.01   13.9    .    516  0.37  0.07   -0.01  0.33    38
  6   29JUL82   7.7     1900     1424     27   547  130   120   2.02   170   644    -0.01   18.9    .    639  0.30  0.59    0.08  0.17    21
  7   20OCT82    .        .      1412     68   538  130   120   2.20   170   638    -0.01   18.3    .    602  0.30  0.10    0.07  0.31    21

 OBS  FE   DOC    AS      SE      V     MOL     HG    AL   BA   BE   BI   BR   CD   CR   CU   GA   GE   PB   LI   MN   NI   SR   TI   ZN   ZR   ALPHA   BETA

  4    .     6  -0.01   -0.01   -0.5   -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .     .      .
  5    .    13  -0.01   -0.01   -0.5   -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .     .      .
  6    .     3  -0.01   -0.01   -0.5   -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .     .      .
  7    .     7  -0.01   -0.01   -0.1   -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .     .      .
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                                         RIO BLANCO OIL SHALE COMPANY
                                 ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                                     WATER CHEMISTRY DATA - TRACT C-A

----------------------------------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S27S -----------------------------------

  OBS  DATE    PH  SPC_COND TDS  TSS ALK  CA MG  K    NA  HCO3  CO3    CL  NO2 SO4  F    NH3  PO4   B    SIO2 FE DOC  AS    SE    V

    8 31JAN82 7.7    1400   1070  64 429  99 83 1.95 120 503  -0.01 13.1  .  436 0.20 0.69 0.13 0.34  19  .   5 -0.01 -0.01 -0.5
    9 18FEB82 7.4    1500   1055 125 488 108 87 1.73 150 571  -0.01 12.1  .  418 0.62 0.12 0.11 0.21  21  .  10  0.01 -0.01 -0.5
   10 31MAR82 7.9    1500   1080  27 511 106 88 1.84 140 599  -0.01 12.8  .  453 0.38 0.96 0.10 0.27  22  .  13 -0.01 -0.01 -0.5
   11 20APR82 7.4    1550   1128  87 526 120 90 2.50 150 617  -0.01 13.9  .  450 0.26 0.46 0.05 0.30  27  .  13 -0.01 -0.01 -0.5
   12 29JUL82 7.6    1600   1114  18 505 110 86 1.64 140 595  -0.01 18.0  .  452 0.27 0.16 0.07 0.32  21  .   3 -0.01 -0.01 -0.5
   13 20OCT82  .       .       . 346 515 120 91 2.20 140 606  -0.01 12.7  .  440 0.30 0.95 0.06 0.22  24  .   5 -0.01 -0.01 -0.1

  OBS MOL   HG    AL    BA    BE     BI    BR    CD     CR     CU    GA    GE    PB    LI   MN    NI    SR   TI   ZN    ZR ALPHA BETA

    8 -0.1 -0.3   .     .     .      .     .     .      .      .     .     .     .     .    .     .     .    .    .     .    .    .
    9 -0.1 -0.3   .     .     .      .     .     .      .      .     .     .     .     .    .     .     .    .    .     .    .    .
   10 -0.1 -0.3   .     .     .      .     .     .      .      .     .     .     .     .    .     .     .    .    .     .    .    .
   11 -0.1 -0.3   .     .     .      .     .     .      .      .     .     .     .     .    .     .     .    .    .     .    .    .
   12 -0.1 -0.3   .     .     .      .     .     .      .      .     .     .     .     .    .     .     .    .    .     .    .    .
   13 -0.1 -0.3 -0.1  -0.1 -0.01  -0.01 -0.1  -0.01  -0.01  -0.01  -0.5  -0.1 -0.01  0.01 0.38 -0.05  2.54 -0.5 -0.01 -10  3.6  5.4

----------------------------------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S28AD ----------------------------------

OBS    DATE     PH   SPC_COND   TDS    TSS   ALK   CA    MG     K    NA    HCO3    CO3     CL    NO2   SO4     F      NH3    PO4     B     SIO2

14    31JAN82   7.8    2850     2260   67    579   140   198   2.9   270   685    -0.01   32.6    .    1147   0.56    0.86   0.35   0.42    23
15    21OCT82    .       .      2254   38    620   140   200   3.0   270   729    -0.01   26.6    .    1065   0.40   -0.05   0.09   0.40    23

OBS   FE   DOC    AS      SE      V     MOL     HG    AL   BA   BE   BI   BR   CD   CR   CU   GA   GE   PB   LI   MN   NI   SR   TI   ZN   ZR   ALPHA   BETA

14    .    10   -0.01   -0.01   -0.5   -0.1   -0.3    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .     .      .
15    .     6   -0.01   -0.01   -0.1   -0.1   -0.3    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .     .      .

----------------------------------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S28AS ----------------------------------

OBS    DATE     PH   SPC_COND   TDS    TSS   ALK   CA    MG    K   NA    HCO3    CO3     CL    NO2   SO4     F     NH3    PO4     B    SIO2

16    31JAN82   7.7    3000     2356   213   594   150   205   3   300   702    -0.01   33.6    .    1254   0.57   0.17   0.15   0.4    21

OBS   FE   DOC    AS      SE      V     MOL     HG    AL   BA   BE   BI   BR   CD   CR   CU   GA   GE   PB   LI   MN   NI   SR   TI   ZN   ZR   ALPHA   BETA

16    .     9   -0.01   -0.01   -0.5   -0.1   -0.3    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .     .      .
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                                      RIO BLANCO OIL SHALE COMPANY
                                ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                                   WATER CHEMISTRY DATA - TRACT C-A

------------------------------------ REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S28D ------------------------------------

OBS   DATE     PH  SPC_COND  TDS   TSS   ALK  CA  MG    K    NA   HCO3   CO3    CL   NO2  SO4   F    NH3   PO4   B    SIO2

17   29JAN82  7.7    2125    1648  91   575  91  147  3.1  230  677   -0.01  24.8   .   758  0.56  3.67  0.43  0.39   22
18   21OCT82  .        .     1720  76   586  99  150  3.5  240  690   -0.01  22.6   .   783  0.50  2.38  0.32  0.39   26

OBS  FE  DOC   AS    SE     V    MOL    HG   AL  BA  BE  BI  BR  CD  CR  CU  GA  GE  PB  LI  MN  NI  SR  TI  ZN  ZR  ALPHA  BETA

17   .    8  -0.01  -0.01  -0.5  -0.1  -0.3  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .     .     .
18   .    6  -0.01  -0.01  -0.1  -0.1  -0.3  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .     .     .

----------------------------------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S29AD -----------------------------------

OBS   DATE     PH  SPC_COND  TDS   TSS   ALK  CA  MG    K    NA   HCO3   CO3    CL   NO2  SO4    F    NH3   PO4   B    SIO2

19   29JAN82  7.8    4400    4075   4   909  99  304  2.4  760  1074  -0.01  59.4   .   2223  0.86  0.22  0.41  0.68   23

OBS  FE  DOC   AS    SE     V    MOL    HG   AL  BA  BE  BI  BR  CD  CR  CU  GA  GE  PB  LI  MN  NI  SR  TI  ZN  ZR  ALPHA  BETA

19   .   15  -0.01  -0.01  -0.5  0.3   -0.3  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .     .     .

------------------------------------ REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S29D ------------------------------------

OBS   DATE     PH  SPC_COND  TDS   TSS   ALK  CA  MG    K    NA   HCO3   CO3    CL   NO2  SO4   F    NH3   PO4   B    SIO2

20   29JAN82  7.8    2200    1631  -4   602  71  150  2.5  260  711   -0.01  23.2   .   760  0.45  0.19  0.25  0.38   19

OBS  FE  DOC   AS    SE     V    MOL    HG   AL  BA  BE  BI  BR  CD  CR  CU  GA  GE  PB  LI  MN  NI  SR  TI  ZN  ZR  ALPHA  BETA

20   .    9  -0.01  -0.01  -0.5  -0.1  -0.3  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .     .     .

------------------------------------ REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S30 -------------------------------------

OBS   DATE     PH  SPC_COND  TDS   TSS   ALK  CA  MG    K    NA   HCO3   CO3    CL   NO2  SO4   F    NH3   PO4   B    SIO2

21   29JAN82  7.9    2300    1674   9   584  67  156  2.9  260  686   -0.01  23.2   .   789  0.46  0.29  0.14  0.35   20

OBS  FE  DOC   AS    SE     V    MOL    HG   AL  BA  BE  BI  BR  CD  CR  CU  GA  GE  PB  LI  MN  NI  SR  TI  ZN  ZR  ALPHA  BETA

21   .    7  -0.01  -0.01  -0.5  -0.1  -0.3  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .     .     .
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                                              RIO BLANCO OIL SHALE COMPANY
                                      ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                                          WATER CHEMISTRY DATA - TRACT C-A

------------------------------------ REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S7 ------------------------------------

 OBS   DATE      PH   SPC_COND   TDS   TSS   ALK   CA   MG   K      NA   HCO3   CO3     CL    NO2  SO4   F      NH3   PO4   B     SIO2

 22   26JAN82   7.5     1200     801  4267   401   83   60  1.14    99   468   -0.01   16.1   .   272  0.33   0.44  0.15  0.04   22
 23   19APR82   7.5     1150     836  1669   404   98   59  1.17   101   469   -0.01   16.1   .   296  0.20   0.03  0.03  0.18   21
 24   29JUL82   7.6     1250     838    25   401   99   60  1.36    96   466   -0.01   12.3   .   312  0.30  -0.05  0.05  0.14   22
 25   13OCT82    .         .     858    78   413  100   63  1.23    98   491   -0.01    9.7   .   298  0.30  -0.05  0.05  0.23   22

 OBS  FE   DOC    AS      SE      V     MOL     HG    AL  BA  BE  BI  BR  CD  CR  CU  GA  GE  PB  LI  MN  NI  SR  TI  ZN  ZR  ALPHA  BETA

 22   .     8   -0.01   -0.01   -0.5   -0.1   -0.3   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .
 23   .    15    0.01   -0.01   -0.5   -0.1   -0.3   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .
 24   .     4   -0.01   -0.01   -0.5   -0.1   -0.3   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .
 25   .     2   -0.01   -0.01   -0.1   -0.1   -0.3   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .


------------------------------------ REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S8 ------------------------------------

 OBS   DATE      PH   SPC_COND   TDS   TSS   ALK   CA   MG   K     NA   HCO3   CO3     CL    NO2  SO4   F     NH3    PO4    B    SIO2

 26   29JUL82   7.7     1100     692    30   376   88   52  1.23   72   442   -0.01   13.6   .   223  0.29  -0.05   0.08  0.18   23
 27   13OCT82    .         .     716  2816   367   89   55  1.11   75   432   -0.01   13.6   .   217  0.30   0.07   0.11  0.25   21

 OBS  FE   DOC    AS      SE      V     MOL     HG    AL  BA  BE  BI  BR  CD  CR  CU  GA  GE  PB  LI  MN  NI  SR  TI  ZN  ZR  ALPHA  BETA

 26   .     5   -0.01   -0.01   -0.5   -0.1   -0.3   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .
 27   .     6   -0.01   -0.01   -0.1   -0.1   -0.3   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .


------------------------ REPORT YEAR=1982   TYPE=DEVELOPMENT ACTIVITIES MONITORING SYSTEM   STATION=YBOXFL ------------------------

  OBS  DATE     PH  SPC_COND TDS  TSS    ALK CA MG  K    NA  HCO3   CO3    CL    NO2  SO4    F     NH3    PO4   B    SIO2 FE DOC    AS    SE

  28  18JAN82 8.8   1375    984 -4.00 483 76 69 1.40 150 566  -0.01 13.70  .  320.0 0.73 -0.05 -0.01 0.12  24   .  10.0 -0.01 -0.01
  29  14JUL82 8.2   1400    918 -0.01 443 74 63 1.39 150 520  -0.01 10.80  .  290.0 0.55  0.09  0.06 0.22  25   .   8.0 -0.01 -0.01
  30  06OCT82 7.8   1400    978   .   466 78 67 1.32 170 552  -0.01 10.08  .  359.7 0.64  0.12  0.04 0.22  24   .   6.5 -0.01 -0.01

  OBS  V    MOL    HG    AL    BA    BE     BI     BR     CD     CR     CU     GA    GE    PB    LI   MN    NI     SR   TI    ZN    ZR ALPHA BETA

  28  -0.5 -0.1 -0.3    .     .     .      .      .      .      .      .      .     .     .     .    .     .      .    .     .      .   .    .
  29  -0.5 -0.1 -0.3    .     .     .      .      .      .      .      .      .     .     .     .    .     .      .    .     .      .   .    .
  30  -0.1 -0.1 -0.3 -0.1  -0.1  -0.01  -0.01   1.02  -0.01  -0.01  -0.01  -0.5  -0.1  -0.01 0.03 0.07 -0.05  2.28 -0.5 -0.01  -10   0   8.3
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                                        RIO BLANCO OIL SHALE COMPANY
                                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                                       WATER CHEMISTRY DATA - TRACT C-A

--------------------------- REPORT YEAR=1982   TYPE=DEVELOPMENT ACTIVITIES MONITORING SYSTEM   STATION=YCOFL -------------------------

 OBS  DATE     PH  SPC_COND TDS   TSS    ALK  CA MG  K    NA   HCO3  CO3    CL    NO2  SO4    F     NH3  PO4    B    SIO2 FE DOC   AS     SE

 31  13JUL82 8.3    1700    1164 -0.01 549   92 84 1.12 190 646  -0.01 15.10   .  434.0 0.32 -0.05 0.03 0.22  23   .   9  -0.01 -0.01
 32  06OCT82 8.0    1700    1226   .   548 100 84 1.07 190 649  -0.01 15.57   .  432.1 0.36  0.14 0.05 0.28  22   .   4  -0.01 -0.01

 OBS  V    MOL   HG    AL    BA    BE     BI     BR   CD     CR     CU    GA    GE    PB    LI   MN    NI    SR   TI    ZN    ZR ALPHA BETA

 31  -0.5 -0.1 -0.3   .     .     .      .      .     .      .      .     .     .     .     .    .     .     .    .     .     .    .     .
 32  -0.1 -0.1 -0.3 -0.1 -0.1 -0.01  -0.01  1.21 -0.01  -0.01  -0.01  -0.5  -0.1 -0.01  0.01 0.24 -0.05 2.31 -0.5 -0.01  -10   0   15.4

------------------------ REPORT YEAR=1982   TYPE=DEVELOPMENT ACTIVITIES MONITORING SYSTEM   STATION=YCOINJ -------------------------

   OBS  DATE     PH  SPC_COND TDS   TSS    ALK CA MG  K    NA  HCO3  CO3      CL NO2  SO4    F    NH3   PO4    B   SIO2 FE DOC   AS     SE

   33  29APR82 8.2    1500    1015 16.00 495 40 80 0.37 200 580  -0.01   8.63  .  342.0 1.40 0.13 -0.01 0.24  27   .  3.0 -0.01 -0.01
   34  26JUL82 8.1    1300    1014 -0.01 479 40 76 0.37 200 540   1.21   8.63  .  380.0 1.57 0.20  0.03 0.24  26   .  2.0  0.01 -0.01
   35  06OCT82 8.4    1600    1044   .   476 45 80 0.50 210 565  -0.01  10.87  .  389.2 1.58 0.20 -0.01 0.16  25   .  8.8 -0.01 -0.01

   OBS  V    MOL   HG    AL    BA    BE     BI     BR    CD     CR     CU    GA    GE    PB    LI   MN    NI    SR   TI    ZN    ZR ALPHA BETA

   33  -0.5 -0.1 -0.3   .     .     .      .      .     .      .      .     .     .     .     .    .     .     .    .     .     .    .     .
   34  -0.5 -0.1 -0.3   .     .     .      .      .     .      .      .     .     .     .     .    .     .     .    .     .     .    .     .
   35  -0.1 -0.1 -0.3 -0.1 -0.1 -0.01  -0.01  0.96 -0.01  -0.01  -0.01  -0.5  -0.1 -0.01  0.09 0.01 -0.05  7.5 -0.5 -0.01  -10   0     0

------------------------ REPORT YEAR=1982   TYPE=DEVELOPMENT ACTIVITIES MONITORING SYSTEM   STATION=YERPOND ------------------------

 OBS  DATE     PH  SPC_COND TDS   TSS ALK   CA  MG  K     NA  HCO3     CO3      CL NO2 SO4   F      NH3  PO4    B   SIO2 FE DOC    AS     SE

 36  29JAN82  9.9    4800    3611   9 1359 9.6 58 2.02 1270 503    55.30    2.05  .  2038 1.30   0.21 0.09 0.26   11 .  18   -0.010 -0.01
 37  31MAR82 10.0    4900    4040  -4 1325 9.2 54 1.83 1240 508    52.30    1.74  .  2043 1.38   3.26 0.07 0.27   10 .  17   -0.010 -0.01
 38  26OCT82  9.7    6350    4362   . 1657 3.9 61 2.70 1550 670     6.45  258.20  .  1527 2.00  -0.05 0.04 0.22    9 .  29    0.010  0.03
 39  22NOV82   .        .    4292   . 1688 4.6 59 2.50 1400 643   677.00  242.70  .  1520 1.90   0.22 0.04 0.21  108 .  18    0.014  0.03

 OBS  V    MOL   HG   .AL   BA    BE     BI     BR     CD     CR     CU    GA    GE    PB    LI   MN    NI    SR   TI    ZN    ZR ALPHA BETA

 36  -0.5 -0.1 -0.3   .     .     .      .      .      .      .      .     .     .     .     .    .     .     .    .     .     .    .     .
 37  -0.5 -0.1 -0.3   .     .     .      .      .      .      .      .     .     .     .     .    .     .     .    .     .     .    .     .
 38  -0.1 -0.1 -0.3 -0.1 -0.1 -0.01  -0.01  -0.10  -0.01  -0.01  -0.01  -0.5  -0.1 -0.01  0.19 0.06 -0.05 0.22 -0.5 -0.01  -10  2.2   17
 39  -0.1 -0.1 -0.3 -0.1 -0.1 -0.01  -0.01   0.63  -0.01  -0.01  -0.01  -0.5  -0.1 -0.01  0.20 0.08 -0.05 2.10 -0.5  0.06  -10   .     .
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                                        RIO BLANCO OIL SHALE COMPANY
                                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                                       WATER CHEMISTRY DATA - TRACT C-A

----------------------- REPORT YEAR=1982   TYPE=DEVELOPMENT ACTIVITIES MONITORING SYSTEM   STATION=YJEFFPOND -----------------------

   OBS  DATE     PH  SPC_COND   TDS  TSS    ALK  CA MG  K    NA  HCO3   CO3    CL   NO2 SO4  F      NH3    PO4   B     SIO2 FE DOC   AS     SE

   40  21JAN82 8.3    1425      975 -4.00 481 38 78 0.48 150 561   -0.01 9.41   .  285 1.33  0.17  0.01 0.06  26   .  -3  -0.01 -0.01
   41  18FEB82 8.3    1400      792 16.00 367 36 75 0.43 201 404   -0.01 5.38   .  294 1.43  0.33  0.11 0.22  27   .   5  -0.01 -0.01
   42  25MAR82 8.2    1450     1020 -4.00 466 42 81 0.44 210 557   -0.01 8.29   .  370 1.51  0.28 -0.01 0.29  27   .   7  -0.01 -0.01
   43  29APR82 8.3    1425     1020  4.00 497 40 80 0.36 210 583   -0.01 9.52   .  346 1.44  0.15 -0.01 0.25  27   .   5  -0.01 -0.01
   44  28JUL82 8.3    1400      980 -0.01 472 40 77 0.52 200 531    1.21 8.63   .  374 1.56  0.25  0.10 0.21  27   .  -3   0.02 -0.01
   45  27OCT82 7.8    1400     1060   .   466 46 83 0.69 200 539    3.62 9.00   .  428 1.60 -0.05  0.01 0.24  20   .   6  -0.01 -0.01

   OBS  V    MOL   HG    AL   BA   BE     BI    BR   CD     CR     CU     GA    GE    PB    LI   MN    NI    SR TI   ZN   ZR ALPHA BETA

   40  -0.5 -0.1 -0.3    .    .    .      .     .    .      .      .      .     .     .     .    .     .     .  .    .    .    .     .
   41  -0.5 -0.1 -0.3    .    .    .      .     .    .      .      .      .     .     .     .    .     .     .  .    .    .    .     .
   42  -0.5 -0.1 -0.3    .    .    .      .     .    .      .      .      .     .     .     .    .     .     .  .    .    .    .     .
   43  -0.5 -0.1 -0.3    .    .    .      .     .    .      .      .      .     .     .     .    .     .     .  .    .    .    .     .
   44  -0.5 -0.1 -0.3    .    .    .      .     .    .      .      .      .     .     .     .    .     .     .  .    .    .    .     .
   45  -0.1 -0.1 -0.3 -0.1  0.1 -0.01  -0.01  0.4 -0.01  -0.01  -0.01  -0.5  -0.1  -0.01  0.11 0.05 -0.05  7 -0.5 0.11 -10  5.8   7.8

------------------------- REPORT YEAR=1982   TYPE=DEVELOPMENT ACTIVITIES MONITORING SYSTEM   STATION=YMET3 -------------------------

  OBS  DATE     PH  SPC_COND   TDS  TSS    ALK  CA MG  K    NA  HCO3   CO3       CL NO2  SO4    F     NH3  PO4   B     SIO2 FE DOC   AS     SE

  46  17FEB82 7.8    1350      999 79.00 478 80 67 1.36 170 563   -0.01   9.52   .  376.0 0.85 -0.05 0.13 0.22  24   .  9.0 -0.01 -0.01
  47  25MAR82 7.9    1400     1052  7.00 476 86 71 1.41 180 569   -0.01  10.50   .  382.0 0.92  0.07 0.03 0.31  24   .  4.0 -0.01 -0.01
  48  14JUL82 8.2    1450      940 -0.01 448 74 63 1.36 150 525   -0.01  11.10   .  305.0 0.53 -0.05 0.03 0.10  24   .  9.0 -0.01 -0.01
  49  20JUL82 8.4    1400      930 42.00 456 78 65 1.27 160 535   -0.01  10.90   .  337.0 0.51 -0.05 0.05 0.18  23   .  1.0 -0.01 -0.01
  50  06OCT82 7.9    1500      992   .   470 82 68 1.24 170 556   -0.01  11.09   .  353.9 0.67  0.18 0.06 0.20  24   .  2.5 -0.01 -0.01

  OBS  V    MOL   HG    AL   BA    BE     BI    BR   CD     CR     CU     GA    GE    PB    LI   MN    NI    SR   TI   ZN     ZR ALPHA BETA

  46  -0.5 -0.1 -0.3    .    .     .      .     .    .      .      .      .     .     .     .    .     .     .    .    .      .    .     .
  47  -0.5 -0.1 -0.3    .    .     .      .     .    .      .      .      .     .     .     .    .     .     .    .    .      .    .     .
  48  -0.5 -0.1 -0.3    .    .     .      .     .    .      .      .      .     .     .     .    .     .     .    .    .      .    .     .
  49  -0.5 -0.1 -0.3    .    .     .      .     .    .      .      .      .     .     .     .    .     .     .    .    .      .    .     .
  50  -0.1 -0.1 -0.3 -0.1 -0.1 -0.01  -0.01  0.96 -0.01  -0.01  -0.01  -0.5  -0.1  -0.01  0.03 0.08 -0.05 2.27 -0.5 -0.01  -10  2.3  10.5
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                                         RIO BLANCO OIL SHALE COMPANY
                                 ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                                     WATER CHEMISTRY DATA - TRACT C-A

------------------------ REPORT YEAR=1982   TYPE=DEVELOPMENT ACTIVITIES MONITORING SYSTEM   STATION=YSEOFL -------------------------

  OBS  DATE    PH  SPC_COND TDS  TSS ALK CA  MG   K    NA  HCO3  CO3   CL    NO2  SO4   F    NH3  PO4   B   SIO2 FE DOC   AS    SE

  51  18JAN82 7.3    1900    1465  -4 602 110 120 1.71 190 708  -0.01 23.80  .  575.0 0.42 0.06 0.03 0.04  22  .  13.0 -0.01 -0.01
  52  17FEB82 7.9    1500    1156 104 474  92  88 2.50 170 557  -0.01 16.40  .  497.0 0.69 0.05 0.13 0.21  17  .  14.0 -0.01 -0.01
  53  25MAR82 8.1    1850    1409  -4 555 109 102 2.70 210 654  -0.01 20.60  .  604.0 0.75 0.04 0.05 0.40  17  .  12.0 -0.01 -0.01
  54  26JUL82 7.7    1800    1468   3 670 105 108 3.50 230 791  -0.01 20.10  .  569.0 0.40 0.06 0.09 0.37  26  .   8.0  0.03 -0.01
  55  06OCT82 8.0    2050    1400   . 599 100 103 2.70 220 710  -0.01 18.48  .  539.9 0.34 0.17 0.06 0.26  22  .  13.6 -0.01 -0.01

  OBS  V    MOL   HG  AL   BA   BE    BI    BR   CD    CR    CU    GA   GE   PB    LI   MN   NI    SR   TI   ZN    ZR ALPHA BETA

  51  -0.5 -0.1 -0.3  .    .    .     .     .    .     .     .     .    .    .     .    .    .     .    .    .     .    .     .
  52  -0.5 -0.1  1.1  .    .    .     .     .    .     .     .     .    .    .     .    .    .     .    .    .     .    .     .
  53  -0.5 -0.1 -0.3  .    .    .     .     .    .     .     .     .    .    .     .    .    .     .    .    .     .    .     .
  54  -0.5 -0.1 -0.3  .    .    .     .     .    .     .     .     .    .    .     .    .    .     .    .    .     .    .     .
  55  -0.1 -0.1 -0.3 0.2 -0.1 -0.01 -0.01 0.66 -0.01 -0.01 -0.01 -0.5 -0.1 -0.01 0.02 0.03 -0.05 2.54 -0.5 -0.01 -10  6.8  28.5

---------------------- REPORT YEAR=1982   TYPE=DEVELOPMENT ACTIVITIES MONITORING SYSTEM   STATION=YSWPOND-12 ----------------------

      OBS  DATE    PH SPC_COND TDS   TSS ALK CA MG  K    NA  HCO3  CO3   CL   NO2 SO4  F    NH3   PO4   B   SIO2 FE DOC  AS   SE

      56  22NOV82 .      .     2100   .  446 77 80 0.38 370 493  -0.01 41.3  .  998 15.5 45.84 0.06 0.49 110  .  266 0.04 0.05

      OBS  V    MOL  HG   AL   BA   BE    BI    BR   CD    CR   CU    GA   GE   PB    LI   MN   NI    SR  TI   ZN  ZR  ALPHA BETA

      56  -0.1 0.1 -0.3 0.9 -0.1 -0.01 -0.01 -0.1 -0.01 0.01 -0.01 -0.5 -0.1 -0.01 0.51 0.14 -0.05 5.4 -0.5 0.1 -10   .     .

------------------------ REPORT YEAR=1982   TYPE=DEVELOPMENT ACTIVITIES MONITORING SYSTEM   STATION=YWRPOND -------------------------

OBS   DATE     PH   SPC_COND   TDS  TSS   ALK  CA  MG   K     NA   HCO3   CO3    CL     NO2  SO4   F    NH3    PO4    B    SIO2

57   18JAN82  8.2    1475      982  -4    473  38  80  0.37  190  561   -0.01  11.70    .   368  1.30  0.20  -0.01  0.07   25
58   19JAN82  8.2    1475      984  -4    481  37  80  0.42  180  559   -0.01  11.70    .   355  1.32  0.20  -0.01  0.06   24
59   18FEB82  8.2    1375      993  20    476  37  75  0.40  202  557   -0.01   8.85    .   375  1.42  0.26   0.11  0.23   27
60   31MAR82  8.4    1400     1060  -4    500  40  79  0.38  210  580   -0.01   9.63    .   380  1.29  0.36  -0.01  0.29   25

OBS  FE  DOC    AS     SE     V     MOL    HG   AL  BA  BE  BI  BR  CD  CR  CU  GA  GE  PB  LI  MN  NI  SR  TI  ZN  ZR  ALPHA  BETA

57   .   10   -0.01  -0.01  -0.5  -0.1  -0.3  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .
58   .    9   -0.01  -0.01  -0.5  -0.1  -0.3  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .
59   .   11   -0.01  -0.01  -0.5  -0.1  -0.3  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .
60   .    3   -0.01  -0.01  -0.5  -0.1  -0.3  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .
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                                         RIO BLANCO OIL SHALE COMPANY
                                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                                      WATER CHEMISTRY DATA - TRACT C-A

------------------------------- REPORT YEAR=1982   TYPE=LOWER AQUIFER   STATION=GS-15L -------------------------------

OBS  DATE     PH  SPC_COND  TDS  TSS  ALK  CA   MG  K    NA   HCO3  CO3   CL    NO2  SO4  F     NH3   PO4   B     SIO2

61   19JUL82  8.9   1600    1030   2  675  3.9  54  2.3  270  541   12.1  19.9   .   342  9.03  0.41  0.02  0.46   3

OBS  FE  DOC  AS     SE     V     MOL   HG    AL BA BE BI BR CD CR CU GA GE PB LI MN NI SR TI ZN ZR ALPHA BETA

61.  .   3    -0.01  -0.01  -0.5  -0.1  -0.3  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .     .

----------------------------- REPORT YEAR=1982   TYPE=SPRINGS AND SEEPS   STATION=SPG-MILL -----------------------------

OBS  DATE     PH  SPC_COND  TDS  TSS  ALK  CA   MG  K     NA   HCO3  CO3    CL    NO2  SO4  F     NH3   PO4   B     SIO2

62   17FEB82  7.5   1725    1274   32 665   98  80  1.56  231  789   -0.01  19.3   .   435  0.62  0.05  0.12  0.46   24
63   28APR82  7.4   1850    1340    8 667   98  83  1.63  240  768   -0.01  19.0   .   419  0.26  0.08  0.05  0.49   24
64   21JUL82  7.6   1800    1286  356 710  120  81  4.40  240  829   -0.01  22.8   .   412  0.36  0.20  0.10  0.61   29

OBS  FE  DOC  AS     SE     V     MOL   HG    AL BA BE BI BR CD CR CU GA GE PB LI MN NI SR TI ZN ZR ALPHA BETA

62   .   11   -0.01  -0.01  -0.5  -0.1  -0.3  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .     .
63   .    7   -0.01  -0.01  -0.5  -0.1  -0.3  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .     .
64   .    9   -0.01  -0.01  -0.5  -0.1  -0.3  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .     .

------------------------------ REPORT YEAR=1982   TYPE=SPRINGS AND SEEPS   STATION=SPG-14 ------------------------------

OBS  DATE     PH  SPC_COND  TDS  TSS  ALK  CA   MG   K     NA   HCO3  CO3    CL    NO2  SO4  F     NH3   PO4   B     SIO2

65   26JAN82  7.7   2100    1565  858 632   98  120  2.40  230  741   -0.01  34.6   .   603  0.41  0.54  0.30  0.16   21
66   28APR82  7.9   2050    1518   13 632  110  115  2.05  230  747   -0.01  18.5   .   574  0.29  0.14  0.05  0.27   22

OBS  FE  DOC  AS     SE     V     MOL   HG    AL BA BE BI BR CD CR CU GA GE PB LI MN NI SR TI ZN ZR ALPHA BETA

65   .   10   -0.01  -0.01  -0.5  -0.1  -0.3  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .     .
66   .    8   -0.01  -0.01  -0.5  -0.1  -0.3  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .     .

------------------------------ REPORT YEAR=1982   TYPE=SPRINGS AND SEEPS   STATION=SPG-2 ------------------------------

  OBS  DATE     PH  SPC_COND  TDS  TSS  ALK  CA  MG  K     NA  HCO3  CO3   CL    NO2  SO4  F     NH3    PO4    B    SIO2  FE

  67   21JUL82  8.3   840     576  40   302  58  46  1.14  62  319   1.57  7.02   .   186  0.33  -0.05  -0.01  0.2   25   .

  OBS  DOC  AS     SE     V     MOL   HG    AL BA BE BI BR CD CR CU GA GE PB LI MN NI SR TI ZN ZR ALPHA BETA

  67   4    -0.01  -0.01  -0.5  -0.1  -0.3  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .     .
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                                        RIO BLANCO OIL SHALE COMPANY
                                 ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                                     WATER CHEMISTRY DATA - TRACT C-A

------------------------------------ REPORT YEAR=1982   TYPE=SPRINGS AND SEEPS   STATION=SPG-20 ------------------------------------

OBS   DATE     PH   SPC_COND   TDS  TSS  ALK  CA    MG    K     NA  HCO3    CO3     CL    NO2  SO4   F     NH3   PO4    B    SIO2

68   12FEB82  7.5     1250     889  100  428  114   69  0.52   92  500    -0.01   15.5    .   338  0.55  0.12  0.17  0.17   21

OBS  FE  DOC    AS      SE     V    MOL     HG    AL   BA   BE   BI   BR   CD   CR   CU   GA   GE   PB   LI   MN   NI   SR   TI   ZN   ZR   ALPHA  BETA

68   .   11   -0.01   -0.01  -0.5  -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .      .     .

------------------------------------ REPORT YEAR=1982   TYPE=SPRINGS AND SEEPS   STATION=SPG-3 ------------------------------------

OBS   DATE     PH   SPC_COND   TDS  TSS  ALK  CA   MG    K     NA  HCO3    CO3     CL    NO2  SO4   F      NH3   PO4    B    SIO2

69   28APR82  7.1     1300     840    8  386  99   54  0.94   95  447    -0.01   10.6    .   292  0.20   0.88  0.02  0.14   21
70   21JUL82  7.9     1250     774   63  393  98   54  0.95   98  417    -0.01   10.9    .   298  0.19  -0.05  0.02  0.17   21

OBS  FE  DOC    AS      SE     V    MOL     HG    AL   BA   BE   BI   BR   CD   CR   CU   GA   GE   PB   LI   MN   NI   SR   TI   ZN   ZR   ALPHA  BETA

69   .    5   -0.01   -0.01  -0.5  -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .      .     .
70   .    3   -0.01   -0.01  -0.5  -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .      .     .

------------------------------------ REPORT YEAR=1982   TYPE=SPRINGS AND SEEPS   STATION=SPG-4 ------------------------------------

OBS   DATE     PH   SPC_COND   TDS  TSS  ALK  CA    MG    K     NA  HCO3    CO3     CL    NO2  SO4   F      NH3   PO4    B    SIO2

71   28APR82  7.2     1250     820    8  455  110   62  0.95   86  531    -0.01   7.28    .   290  0.26   0.20  0.01  0.15   25
72   21JUL82  7.9     1300     814   36  423  104   61  0.93   85  480    -0.01   7.57    .   298  0.26  -0.05  0.06  0.17   23

OBS  FE  DOC    AS      SE     V    MOL     HG    AL   BA   BE   BI   BR   CD   CR   CU   GA   GE   PB   LI   MN   NI   SR   TI   ZN   ZR   ALPHA  BETA

71   .    9   -0.01   -0.01  -0.5  -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .      .     .
72   .    2   -0.01   -0.01  -0.5  -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .      .     .

------------------------------------ REPORT YEAR=1982   TYPE=SPRINGS AND SEEPS   STATION=SPG-5 ------------------------------------

OBS   DATE     PH   SPC_COND    TDS  TSS   ALK   CA  MG    K      NA   HCO3    CO3     CL   NO2   SO4   F      NH3   PO4    B    SIO2

73   26JAN82  8.1     1250      899   -4   403   80  68  1.25   110   450    -0.01   18.4    .   337  0.41   0.60  0.13  0.04   14
74   28APR82  8.5     1450      950   19   425  100  75  1.11   120   494    -0.01   10.1    .   392  0.29   0.07  0.05  0.21   18
75   21JUL82  7.8     1400     1060   30   468   99  82  0.84   140   554    -0.01   11.2    .   417  0.36  -0.05  0.07  0.24   18

OBS  FE  DOC    AS      SE     V    MOL     HG    AL   BA   BE   BI   BR   CD   CR   CU   GA   GE   PB   LI   MN   NI   SR   TI   ZN   ZR   ALPHA  BETA

73   .    5   -0.01   -0.01  -0.5  -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .      .     .
74   .    7   -0.01   -0.01  -0.5  -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .      .     .
75   .    4   -0.01   -0.01  -0.5  -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .      .     .
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                                              RIO BLANCO OIL SHALE COMPANY
                                        ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                                             WATER CHEMISTRY DATA - TRACT C-A

------------------------------------ REPORT YEAR=1982   TYPE=SPRINGS AND SEEPS   STATION=SPG-8 ------------------------------------

 OBS   DATE     PH   SPC_COND  TDS  TSS   ALK  CA  MG    K     NA  HCO3    CO3       CL  NO2  SO4    F       NH3  PO4    B    SIO2

 76   12FEB82  7.8     1100    720  71    388  90  53  1.08   78  454    -0.01    9.63   .   230  0.55    0.09  0.11  0.14   22
 77   28APR82  6.8     1100    730   4    389  89  54  0.96   75  457    -0.01    9.52   .   216  0.26    0.19  0.05  0.13   23
 78   21JUL82  7.6     1200    612  29    383  84  52  0.93   74  447    -0.01   10.50   .   221  0.30   -0.05  0.02  0.19   22

 OBS  FE   DOC    AS      SE      V     MOL     HG    AL   BA   BE   BI   BR   CD   CR   CU   GA   GE   PB   LI   MN   NI   SR   TI   ZN   ZR   ALPHA  BETA

 76   .    11   -0.01   -0.01   -0.5  -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .      .     .
 77   .     4   -0.01   -0.01   -0.5  -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .      .     .
 78   .     2   -0.01   -0.01   -0.5  -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .      .     .


------------------------------------ REPORT YEAR=1982   TYPE=UINTA FORMATION   STATION=GS-M5U ------------------------------------

   OBS  DATE    PH  SPC_COND TDS   TSS ALK CA MG  K    NA  HCO3  CO3   CL  NO2 SO4   F   NH3  PO4   B   SIO2 FE DOC  AS    SE

   79  12JUL82 7.6   3250   2340   .  367 17 28 1.52 700 419  -0.01 21.2  .  1259 0.07 0.21 0.27 0.15  2   .   8  -0.01 -0.01

   OBS  V   MOL   HG   AL   BA   BE    BI    BR   CD    CR    CU    GA   GE    PB   LI   MN   NI    SR   TI    ZN   ZR  ALPHA BETA

   79  -0.5 -0.1 -0.3 -0.1 -0.1 -0.01 -0.01 0.2 -0.01 -0.01 -0.01 -0.5 -0.1 -0.05 0.21 0.06 -0.05 2.17 -0.5 -0.01 -10  5.8  2.5

--------------------------------------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=AM-3U ------------------------------------

   OBS  DATE    PH  SPC_COND TDS TSS ALK CA MG  K    NA  HCO3  CO3   CL  NO2 SO4  F   NH3   PO4   B   SIO2 FE DOC  AS    SE    V

   80  13JUL82 7.7   1000    756  .  381 33 41 0.54 170 443  -0.01 9.52  .  199 0.97 0.44 -0.01 0.21  15  .   8  -0.01 -0.01 -0.5

   OBS MOL  HG   AL   BA   BE    BI    BR   CD    CR    CU    GA   GE   PB   LI   MN   NI    SR   TI  ZN   ZR  ALPHA BETA

   80  -0.1 -0.3 -0.1 -0.1 -0.01 -0.01 -0.1 -0.01 -0.01 -0.01 -0.5 -0.1 -0.05 0.05 0.05 -0.05 3.76 -0.5 0.01 -10  2.6  0.3

------------------------------------ REPORT YEAR=1982   TYPE=UPPER AGUIFER   STATION=CE-701U ------------------------------------

   OBS   DATE     PH   SPC_COND  TDS   TSS  ALK  CA  MG   K    NA   HCO3   CO3    CL   NO2  SO4   F   NH3  PO4    B   SIO2  FE

   81   27JAN82  7.6    1550    1038  34   443  73  63  0.97  180  517   -0.01  13.6   .   399  0.7  0.4  0.09  0.08  18   .

   OBS  DOC   AS     SE     V    MOL    HG   AL  BA  BE  BI  BR  CD  CR  CU  GA  GE  PB  LI  MN  NI  SR  TI  ZN  ZR  ALPHA  BETA

   81    5  -0.01  -0.01  -0.5  -0.1  -0.3  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .
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                                        RIO BLANCO OIL SHALE COMPANY
                                 ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                                     WATER CHEMISTRY DATA - TRACT C-A

------------------------------------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=CE-702U -------------------------------------

OBS   DATE     PH   SPC_COND   TDS   TSS   ALK   CA   MG    K     NA    HCO3    CO3     CL    NO2   SO4    F    NH3     PO4    B    SIO2

82   28JAN82  8.1     1500    1031   171   464   34   71   0.40   200   545   -0.01   9.75    .    359  1.47  0.44   0.15  0.21   21
83   21APR82  8.1     1275     940   495   490   34   68   0.47   210   571   -0.01   8.51    .    342  1.53  0.71  -0.01  0.28   20
84   20JUL82  7.6     1300     976   340   470   32   69   0.42   210   554   -0.01   9.22    .    356  1.65  0.25  -0.01  0.26   22
85   28OCT82  8.2     1300    1040    80   468   37   76   0.41   200   555   -0.01   8.40    .    384  1.70  0.50  -0.01  0.29   21

OBS  FE  DOC    AS      SE      V     MOL     HG   AL  BA  BE  BI  BR  CD  CR  CU  GA  GE  PB  LI  MN  NI  SR  TI  ZN  ZR  ALPHA  BETA

82   .     6  -0.01  -0.01  -0.5  -0.1  -0.3   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .     .     .
83   .    11  -0.01  -0.01  -0.5  -0.1  -0.3   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .     .     .
84   .    -3  -0.01  -0.01  -0.5  -0.1  -0.3   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .     .     .
85   .     2  -0.01  -0.01  -0.1  -0.1  -0.3   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .     .     .

------------------------------------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=CE-705AU -------------------------------------

  OBS  DATE    PH  SPC_COND TDS   TSS ALK CA MG   K    NA  HCO3   CO3    CL   NO2 SO4   F   NH3    PO4   B    SIO2 FE DOC   AS    SE

  86  28JAN82 8.0   1425    1007 28   479 57 80 0.29 150 559   -0.01 9.86   .  340 0.58 0.36  0.21 0.20   27   .  10   -0.01 -0.01
  87  21APR82 7.5   1250     900 74   480 62 72 0.28 160 558   -0.01 8.07   .  314 0.39 0.43 -0.01 0.27   31   .  10   -0.01 -0.01
  88  13JUL82 7.6   1100     764  .   422 36 59 0.28 140 493   -0.01 9.86   .  238 0.33 0.24 -0.01 0.20   22   .   9   -0.01 -0.01
  89  28OCT82 7.9   1100     954 42   468 62 68 0.26 140 554   -0.01 8.20   .  277 0.40 0.38 -0.01 0.21   29   .   7   -0.01 -0.01

  OBS  V    MOL   HG    AL    BA    BE     BI    BR    CD     CR     CU     GA    GE    PB    LI   MN    NI    SR    TI    ZN    ZR ALPHA BETA

  86  -0.5 -0.1 -0.3    .     .     .      .     .     .      .      .      .     .     .     .    .     .     .     .     .     .    .    .
  87  -0.5 -0.1  0.5    .     .     .      .     .     .      .      .      .     .     .     .    .     .     .     .     .     .    .    .
  88  -0.5 -0.1 -0.3 -0.1  -0.1  -0.01  -0.01  0.2  -0.01  -0.01  -0.01  -0.5  -0.1  -0.05  0.06 0.05 -0.05  2.86  -0.5 -0.01  -10   0   3.5
  89  -0.1 -0.1 -0.3    .     .   . .      .     .     .      .      .      .     .     .     .    .     .     .     .     .     .    .    .

------------------------------------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=CE-707U -------------------------------------

OBS   DATE     PH   SPC_COND   TDS   TSS    ALK   CA   MG    K     NA    HCO3    CO3     CL    NO2   SO4    F    NH3   PO4     B    SIO2

90   27JAN82  7.8     1575     969   1040   461   73   85   0.95   130   539   -0.01   23.1    .    350  0.29  1.24  0.14  -0.01   13

OBS  FE  DOC    AS      SE      V     MOL     HG   AL  BA  BE  BI  BR  CD  CR  CU  GA  GE  PB  LI  MN  NI  SR  TI  ZN  ZR  ALPHA  BETA

90   .     9  -0.01  -0.01  -0.5  -0.1  -0.3   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .     .     .
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                                                   RIO BLANCO OIL SHALE COMPANY
                                           ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                                                WATER CHEMISTRY DATA - TRACT C-A

------------------------------------ REPORT YEAR=1982   TYPE=UPPER AGUIFER   STATION=CE-708U ------------------------------------

    OBS  DATE    PH  SPC_COND TDS TSS ALK CA MG  K   NA  HCO3  CO3  CL NO2 SO4  F   NH3   PO4   B   SIO2 FE DOC  AS    SE    V

    91  13JUL82 8.4    1200   888  .  440 70 60 0.4 140 517  -0.01 12  .  297 0.47 0.24 -0.01 0.22  31  .   7  -0.01 -0.01 -0.5

    OBS MOL   HG   AL   BA   BE    BI    BR   CD    CR    CU    GA   GE   PB    LI   MN   NI    SR   TI   ZN  ZR  ALPHA BETA

    91  -0.1 -0.3 -0.1 -0.1 -0.01 -0.01 -0.1 -0.01 -0.01 -0.01 -0.5 -0.1 -0.05 0.05 0.05 -0.05 3.11 -0.5 0.02 -10   0   5.1

------------------------------------ REPORT YEAR=1982   TYPE=UPPER AGUIFER   STATION=CE-709U ------------------------------------

OBS   DATE    PH  SPC_COND  TDS   TSS   ALK   CA   MG    K    NA   HCO3   CO3    CL   NO2  SO4   F    NH3    PO4   B    SIO2

92   28JAN82  7.2   1750    1184  1620  443   98   94  0.34  140  519   -0.01  14.5   .   510  0.65  0.30   0.25  0.21   32
93   21APR82  7.1   1550    1420    57  566  130  120  1.80  180  657   -0.01  17.4   .   647  0.27  0.12   0.03  0.33   23
94   20JUL82  7.2   1400    1218    30  531  110   91  0.56  160  627   -0.01  13.1   .   444  0.48  0.13  -0.01  0.25   34
95   26OCT82  6.8   1600    1220    44  518  120   94  0.40  150  608   -0.01  13.3   .   484  0.50  0.07   0.02  0.19   34

OBS  FE  DOC   AS     SE     V    MOL   HG   AL  BA  BE  BI  BR  CD  CR  CU  GA  GE  PB  LI  MN  NI  SR  TI  ZN  ZR  ALPHA  BETA

92   .   12  -0.01  -0.01  -0.5  -0.1  -0.3  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .
93   .   13  -0.01  -0.01  -0.5  -0.1   0.5  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .
94   .    3  -0.01  -0.01  -0.5   0.2  -0.3  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .
95   .    4  -0.01  -0.01  -0.1   0.2  -0.3  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .

------------------------------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-D1U ------------------------------------

   OBS  DATE    PH  SPC_COND TDS TSS ALK CA MG  K    NA  HCO3   CO3   CL    NO2 SO4  F     NH3  PO4    B   SIO2 FE DOC  AS    SE

   96  22APR82  .        .   900 12  419 27 84 0.32 160 451    1.82 11.10   .  339 0.76  0.21 -0.01 0.32  22  .  11  -0.01 -0.01
   97  21JUL82 8.2   1100    890  .  403 26 81 0.32 160 449    1.21  9.95   .  321 0.94  0.24 -0.01 0.21  22  .   3  -0.01 -0.01
   98  27OCT82 7.9   1400    964 38  480 50 92 0.26 150 567   -0.01  7.60   .  361 1.00 -0.05 -0.01 0.26  28  .   5  -0.01 -0.01

   OBS  V    MOL    HG   AL    BA    BE    BI   BR   CD    CR    CU    GA   GE   PB    LI   MN    NI   SR   TI   ZN   ZR ALPHA BETA

   96  -0.5 -0.1  0.3   .     .     .     .    .    .     .     .     .    .    .     .    .     .    .    .    .    .    .    .
   97  -0.5 -0.1 -0.3 -0.1  -0.1 -0.01 -0.01 0.3 -0.01 -0.01 -0.01 -0.5 -0.1 -0.05 0.1 0.02 -0.05 3.48 -0.5 0.15 -10    0    0
   98  -0.1 -0.1 -0.3   .     .     .     .    .    .     .     .     .    .    .     .    .     .    .    .    .    .    .    .
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                                          RIO BLANCO OIL SHALE COMPANY
                                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                                        WATER CHEMISTRY DATA - TRACT C-A

------------------------------------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-D3U ----------------------------------------

 OBS  DATE    PH  SPC_COND TDS TSS ALK CA MG  K    NA  HCO3   CO3  CL    NO2 SO4  F    NH3   PO4    B    SIO2 FE DOC  AS     SE

  99 22APR82 8.2    1500   912 25  465 28 77 0.41 200 496   1.82 11.30  .   360 1.94 0.22 -0.01 0.27  20   .  12  -0.01 -0.01
 100 21JUL82 8.0    1200   944  .  428 25 69 0.42 200 498  -0.01  8.35  .   351 2.30 0.17 -0.01 0.21  16   .  -3  -0.01 -0.01
 101 27OCT82 7.4    1400   936 32  453 28 76 0.40 190 540  -0.01  7.40  .   344 2.30 0.06  0.02 0.21  18   .  -3  -0.01 -0.01

 OBS  V    MOL   HG  AL   BA   BE    BI    BR   CD    CR    CU    GA   GE   PB    LI  MN   NI    SR  TI   ZN    ZR ALPHA BETA

  99 -0.5 -0.1  0.4   .    .    .     .     .    .     .     .     .    .    .     .   .    .     .   .    .     .    .    .
 100 -0.5 -0.1 -0.3 -0.1 -0.1 -0.01 -0.01 -0.1 -0.01 -0.01 -0.01 -0.5 -0.1 -0.05 0.11 0.2 -0.05 5.7 -0.5 -0.01 -10   0    0
 101 -0.1 -0.1 -0.3   .    .    .     .     .    .     .     .     .    .    .     .   .    .     .   .    .     .    .    .

------------------------------------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-MDP2CU ----------------------------------------

 OBS  DATE    PH  SPC_COND TDS  TSS ALK CA MG   K    NA  HCO3  CO3   CL    NO2 SO4  F    NH3  PO4   B    SIO2 FE DOC  AS     SE

 102 28JAN82 8.0    1800   1275 24  399 76 110 0.50 180 464  -0.01 11.10  .   635 1.53 0.29 0.16 0.23  27   .  17  -0.01 -0.01
 103 22APR82 7.8    1700   1230 13  465 72 109 0.49 200 543  -0.01 10.50  .   597 1.47 0.16 0.02 0.33  32   .  11   0.01 -0.01
 104 21JUL82 7.7    1300   1084  .  466 42  80 0.55 200 544  -0.01  8.73  .   413 1.97 0.29 0.02 0.27  26   .   2   0.02 -0.01
 105 27OCT82 7.8    1500   1028 32  498 46  83 0.44 200 595  -0.01  5.70  .   381 1.90 0.34 0.11 0.24  27   .  -3   0.01 -0.01

 OBS  V    MOL   HG   AL   BA   BE    BI    BR   CD    CR    CU    GA   GE   PB    LI   MN    NI    SR  TI   ZN    ZR ALPHA BETA

 102 -0.5 -0.1 -0.3   .    .    .     .     .    .     .     .     .    .    .     .    .     .     .   .    .     .    .    .
 103 -0.5 -0.1  0.3   .    .    .     .     .    .     .     .     .    .    .     .    .     .     .   .    .     .    .    .
 104 -0.5 -0.1 -0.3 -0.1 -0.1 -0.01 -0.01 -0.1 -0.01 -0.01 -0.01 -0.5 -0.1 -0.05 0.13 -0.01 -0.05 6.1 -0.5 -0.01 -10   0    0
 105 -0.1 -0.1 -0.3   .    .    .     .     .    .     .     .     .    .    .     .    .     .     .   .    .     .    .    .

------------------------------------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M10U ----------------------------------------

 OBS  DATE    PH  SPC_COND TDS TSS ALK CA MG  K    NA  HCO3  CO3   CL  NO2 SO4  F    NH3   PO4    B    SIO2 FE DOC  AS     SE     V

 106 14JUL82 7.5    1250   950  .  395 62 80 0.38 130 461  -0.01 11.2  .  383 0.92 0.21 -0.01 0.19  28   .   7  -0.01 -0.01 -0.5

 OBS MOL   HG   AL   BA   BE    BI    BR   CD    CR    CU    GA   GE   PB    LI   MN    NI    SR   TI   ZN   ZR  ALPHA BETA

 106 -0.1 -0.3 -0.1 -0.1 -0.01 -0.01 0.5 -0.01 -0.01 -0.01 -0.5 -0.1 -0.05 0.04 -0.01 -0.05 4.17 -0.5 0.06 -10   0    4

------------------------------------- REPORT YEAR=1982   TYPE=UPPER AGUIFER   STATION=GS-M11U ----------------------------------------

 OBS  DATE    PH  SPC_COND TDS TSS ALK CA MG  K    NA  HCO3  CO3   CL  NO2 SO4  F     NH3   PO4    B    SIO2 FE DOC  AS     SE

 107 14JUL82 7.6    1250   946  .  406 92 68 1.29 108 474  -0.01 11.2  .  351 0.31 -0.05 -0.01 0.19  18   .   9  -0.01 -0.01

 OBS  V    MOL   HG   AL   BA   BE    BI   BR  CD    CR    CU    GA   GE   PB    LI   MN    NI    SR   TI  ZN  ZR  ALPHA BETA
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107 -0.5 -0.1 -0.3 -0.1 -0.1 -0.01 -0.01 1  -0.01 -0.01 -0.01 -0.5 -0.1 -0.05 0.02 -0.01 -0.05 2.05 -0.5 0.1 -10 10.6  3.4

------------------------------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M12U ------------------------------------

OBS  DATE    PH  SPC_COND TDS TSS ALK CA MG  K   NA  HCO3  CO3   CL  NO2 SO4  F   NH3  PO4   B   SIO2 FE DOC  AS    SE    V

108 14JUL82 7.4    1400    990  .  483 53 70 0.79 180 568  -0.01 6.16  .  342 0.43 2.2 -0.01 0.21  37  .   6  -0.01 -0.01 -0.5

OBS MOL   HG   AL   BA   BE   BI    BR   CD    CR    CU    GA   GE   PB    LI   MN   NI    SR   TI   ZN   ZR  ALPHA BETA

108 -0.1 -0.3 -0.1 -0.1 -0.01 -0.01 -0.1 -0.01 -0.01 -0.01 -0.5 -0.1 -0.05 0.09 0.03 -0.05 4.01 -0.5 -0.01 -10  4.8  1.6

------------------------------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M2U ------------------------------------

 OBS  DATE   PH SPC_COND TDS  TSS ALK CA  MG   K  NA  HCO3 CO3   CL  NO2 SO4  F  NH3  PO4   B  SIO2 FE DOC  AS    SE    V

 109 12JUL82 9     1500   1098  .  468 3.7 110 2.3 200 344  10.3 15.7  .  511 1.5 3.86 0.05 0.2  3   .   4  -0.01 -0.01 -0.5

 OBS MOL   HG   AL   BA   BE    BI    BR   CD    CR    CU    GA   GE   PB    LI   MN    NI   SR   TI   ZN   ZR  ALPHA BETA

 109 -0.1 -0.3 -0.1 -0.1 -0.01 -0.01 -0.1 -0.01 -0.01 -0.01 -0.5 -0.1 -0.05 0.08 -0.01 -0.05 0.1 -0.5 -0.01 -10  2.2  5.6

------------------------------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M3U ------------------------------------

OBS  DATE    PH  SPC_COND TDS TSS ALK CA  MG  K   NA  HCO3 CO3   CL  NO2 SO4  F   NH3  PO4   B   SIO2 FE DOC  AS    SE    V

110 12JUL82 7.6   3250    968  .  574 3.8 46 1.24 290 312  18.1 15.4  .  477 0.27 1.15 0.09 0.24  2   .  10  -0.01 -0.01 -0.5

OBS MOL   HG   AL   BA   BE   BI    BR   CD    CR    CU    GA   GE   PB    LI   MN    NI    SR   TI   ZN   ZR  ALPHA BETA

110 -0.1 -0.3 -0.1 -0.1 -0.01 -0.01 -0.1 -0.01 -0.01 -0.01 -0.5 -0.1 -0.05 0.09 -0.01 -0.05 2.15 -0.5 -0.01 -10  0.8   0

------------------------------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M6U ------------------------------------

OBS   DATE    PH   SPC_COND   TDS  TSS   ALK   CA  MG   K    NA   HCO3  CO3   CL  NO2  SO4   F    NH3  PO4    B    SIO2  FE

111  25JAN82  8     1500     953  46    660   30  67  0.75  230  760   1.21  15    .   212  0.22  0.44  0.2  -0.01   33   .

OBS  DOC   AS    SE     V    MOL   HG   AL  BA  BE  BI  BR  CD  CR  CU  GA  GE  PB  LI  MN  NI  SR  TI  ZN  ZR  ALPHA  BETA

111   6   -0.01 -0.01  -0.5  -0.1  -0.3  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .    .     .
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                                        RIO BLANCO OIL SHALE COMPANY
                                ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                                    WATER CHEMISTRY DATA - TRACT C-A

------------------------------------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M8U -------------------------------------

OBS   DATE     PH   SPC_COND   TDS    TSS   ALK   CA   MG    K    NA    HCO3    CO3     CL    NO2   SO4    F     NH3    PO4     B     SIO2

112  28JAN82   8.2    1550     1028   19    501   27   80   0.8   200   592    -0.01   7.17    .    353   0.68   0.93   0.16   0.21    17

OBS  FE   DOC    AS      SE      V     MOL     HG    AL   BA   BE   BI   BR   CD   CR   CU   GA   GE   PB   LI   MN   NI   SR   TI   ZN   ZR   ALPHA   BETA

112  .     9    -0.01   -0.01   -0.5   -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .      .       .

------------------------------------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M9U -------------------------------------

   OBS  DATE    PH SPC_COND TDS  TSS ALK CA  MG    K    NA  HCO3  CO3    CL  NO2 SO4   F  NH3  PO4   B   SIO2 FE DOC  AS    SE

   113 14JUL82 7    3000    2700  .  759 290 180 1.94 250 884  -0.01 11.2  .  1271 0.1 0.21 0.02 0.16  53  .   4  -0.01 -0.01

   OBS  V   MOL   HG   AL   BA    BE    BI    BR   CD    CR    CU    GA   GE    PB    LI   MN    NI    SR   TI   ZN   ZR  ALPHA BETA

   113 -0.5 -0.1 -0.3 -0.1 -0.1 -0.01 -0.01 0.6 -0.01 -0.01 -0.01 -0.5 -0.1 -0.05 0.08 0.03 -0.05 3.92 -0.5 0.14 -10   0   2.5

------------------------------------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-10U -------------------------------------

   OBS  DATE    PH SPC_COND TDS  TSS ALK CA.  MG   K    NA  HCO3  CO3    CL  NO2 SO4  F    NH3  PO4    B   SIO2 FE DOC  AS    SE

   114 16JUL82 .       .    1608  .  638 120 108 0.91 240 757  -0.01 8.96  .  653 0.16 0.3 -0.01 0.35  44  .   3  -0.01 -0.01

   OBS  V   MOL   HG   AL   BA    BE    BI    BR   CD    CR    CU    GA   GE    PB    LI  MN   NI    SR   TI   ZN   ZR  ALPHA BETA

   114 -0.5 -0.1 -0.3 -0.1 -0.1 -0.01 -0.01 0.5 -0.01 -0.01 -0.01 -0.5 -0.1 -0.05 0.14 0.2 -0.05 1.51 -0.5 0.02 -10   7    0

------------------------------------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-13U -------------------------------------

   OBS  DATE    PH  SPC_COND TDS  TSS ALK CA MG  K    NA  HCO3  CO3    CL  NO2 SO4  F  NH3  PO4   B   SIO2 FE DOC  AS    SE    V

   115 16JUL82 7.4   1425   1176  .  524 81 78 0.37 190 621  -0.01 11.2  .  443 0.1 0.28 0.42 0.29  47  .  -3  -0.01 -0.01 -0.5

   OBS MOL   HG   AL   BA   BE    BI    BR   CD    CR    CU    GA   GE    PB    LI    MN    NI    SR   TI   ZN   ZR  ALPHA BETA

   115 -0.1 -0.3 -0.1 -0.1 -0.01 -0.01 -0.2 -0.01 -0.01 -0.01 -0.5 -0.1 -0.05 0.09 -0.01 -0.05 2.17 -0.5 -0.01 -10   3    0
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                                        RIO BLANCO OIL SHALE COMPANY
                                ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                                      WATER CHEMISTRY DATA - TRACT C-A

------------------------------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-2-3U ------------------------------------

 OBS   DATE     PH   SPC_COND  TDS    TSS  ALK   CA   MG    K     NA    HCO3    CO3     CL    NO2   SO4   F     NH3   PO4    B     SIO2

 116  27JAN82  7.2     1600    1043  36    491   85   78  0.45   150   573    -0.01   12.8    .    385  0.34  0.88  0.27  0.06    30

 OBS  FE  DOC    AS     SE     V    MOL     HG    AL   BA   BE   BI   BR   CD   CR   CU   GA   GE   PB   LI   MN   NI   SR   TI   ZN   ZR   ALPHA   BETA

 116  .    3   -0.01  -0.01  -0.5  -0.1   -0.3   .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .      .       .

------------------------------------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-9U -------------------------------------

    OBS  DATE    PH  SPC_COND TDS TSS ALK CA MG  K    NA  HCO3  CO3   CL  NO2 SO4  F    NH3   PO4    B   SIO2 FE DOC  AS    SE

    117 19JUL82 7.9   1000    784  .  397 90 60 0.57 101 461  -0.01 12.9  .  320 0.26 0.13 -0.01 0.24  29   .   3  -0.01 -0.01

    OBS  V   MOL  HG   AL   BA   BE    BI    BR   CD    CR    CU    GA   GE   PB    LI   MN    NI   SR    TI   ZN   ZR  ALPHA BETA

    117 -0.5 -0.1 -0.3 -0.1 -0.1 -0.01 -0.01 0.5 -0.01 -0.01 -0.01 -0.5 -0.1 -0.05 0.04 0.36 -0.05 1.38 -0.5 0.04 -10   0   0.1
```

APPENDIX 5-1.2

1982 Field Measurements Data

- o Development Activities Monitoring
- o Springs and Seeps

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                          RIO BLANCO OIL SHALE COMPANY
                    ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                      DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YBOXFL ----------------

            OBS      DATE       TEMP     PH      COND      FLOW      TSS

              1    06JAN82       5.5    7.9     1450     157.0        .
              2    07JAN82       6.6    7.9     1450     157.0        .
              3    13JAN82       8.1    7.8     1425     157.0        .
              4    08APR82      12.3    8.0     1375     229.0        .
              5    16APR82      12.7    8.0     1300     220.0        .
              6    21APR82      12.9    7.9     1400     287.0        .
              7    29APR82      13.0    7.8     1400     229.0        .
              8    30APR82      10.1    7.5     1350     319.0        .
              9    06MAY82      13.3    7.9     1425         .        .
             10    14MAY82      12.0    7.8     1400     462.0        .
             11    21MAY82      12.8    7.9     1000     516.0        .
             12    25MAY82      18.2    8.2     1100     426.0        .
             13    03JUN82      17.0    8.4     1200     395.0        .
             14    10JUN82      15.5    7.5     1250     377.0        .
             15    16JUN82      14.0    7.8     1350     346.0        .
             16    22JUN82      14.9    7.9     1350     319.0        .
             17    30JUN82      14.8    7.9     1400     287.0        .
             18    08JUL82      17.0    7.9     1400     346.0        .
             19    14JUL82      15.1    8.2     1400     413.0        .
             20    23JUL82      14.5    7.8     1200     359.0        .
             21    28JUL82      15.0    7.6     1400     359.0        .
             22    05AUG82      16.3    7.8     1400     287.0        .
             23    10AUG82      16.8    7.7     1350     332.0        .
             24    19AUG82      15.5    7.8     1350     332.0        .
             25    25AUG82      13.6    7.8     1250     305.0        .
             26    01SEP82      12.4    8.0     1400     287.0        .
             27    09SEP82      12.3    8.0     1450     180.0        .
             28    15SEP82      11.6    7.9     1400     206.0        .
             29    22SEP82      10.6    7.9     1450     228.9        .
             30    29SEP82      10.5    7.8     1400     273.8        .
             31    06OCT82      10.5    7.8     1400     260.3        .
             32    13OCT82      11.5    7.6     1300     260.3        .
             33    20OCT82      10.5    7.6     1350     206.4        .
             34    29OCT82      10.0    7.9     1250     179.5        .
             35    04NOV82      10.2    7.6     1400     166.1        .
             36    10NOV82       7.9    7.6     1250     193.0        .
             37    17NOV82       9.4    7.6     1350     179.5        .
             38    24NOV82       7.6    7.7     1400     193.0        .
             39    06DEC82      11.0    7.7     1350     193.0        .
             40    14DEC82       9.0    7.6     1400     193.0        .
             41    22DEC82      10.5    7.5     1400     193.0        .
             42    29DEC82       9.0    7.5     1400     193.0        .
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                    RIO BLANCO OIL SHALE COMPANY
               ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                 DEVELOPMENT ACTIVITIES MONITORING DATA

----------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YCOFL -----------------

          OBS      DATE       TEMP      PH      COND      FLOW      TSS

          43     14MAY82      12.2     8.2      1450     260.0       .
          44     21MAY82      16.0     8.2      1450     260.0       .
          45     25MAY82      21.8     8.3      1400     260.0       .
          46     03JUN82      21.0     8.3      1500     240.0       .
          47     10JUN82      18.0     7.7      1600     210.0       .
          48     16JUN82      16.0     8.4      1400     210.0       .
          49     22JUN82      17.0     8.1      1500     210.0       .
          50     30JUN82      16.1     8.3      1450      13.0       .
          51     08JUL82      19.0     8.4      1450      13.0       .
          52     14JUL82      20.2     8.3      1700      17.0       .
          53     23JUL82      18.5     7.8      1500      17.0       .
          54     28JUL82      18.5     7.9      1500      24.0       .
          55     05AUG82      18.3     8.2      1450      17.0       .
          56     10AUG82      18.3     8.1      1400        .        .
          57     19AUG82      23.0     8.1      1600      21.0       .
          58     25AUG82      18.3     8.1      1500      19.0       .
          59     01SEP82      16.5     8.2      1600      21.0       .
          60     09SEP82      18.6     8.2      1650      21.0       .
          61     15SEP82      13.9     7.9      1650        .        .
          62     22SEP82      12.3     8.1      1700      21.1       .
          63     29SEP82       9.6     7.8      1500      28.7       .
          64     06OCT82      10.0     8.0      1700      21.1       .
          65     13OCT82      12.5     7.7      1500      23.8       .
          66     20OCT82      10.6     7.7      1575      23.8       .
          67     29OCT82       6.2     8.0      1400      23.8       .
          68     04NOV82       9.1     7.7      1550      23.8       .
          69     10NOV82       6.3     7.7      1450      26.0       .
          70     17NOV82       0.7     7.7      1450      23.8       .
          71     06DEC82       9.5     7.7      1500      23.8       .
          72     14DEC82       4.0     7.7      1500      23.8       .
          73     22DEC82       6.5     7.7      1500      23.8       .
          74     29DEC82       2.0     7.7      1450        .        .

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YCOINJ ----------------

          OBS      DATE       TEMP      PH      COND      FLOW      TSS

           75    01JAN82       8.6     8.3      1450       .         4
           76    02JAN82       8.8     8.2      1450       .         5
           77    03JAN82       8.2     8.2      1450       .         5
           78    04JAN82       8.0     8.3      1450       .         6
           79    05JAN82       7.8     8.3      1375       .         5
           80    06JAN82       8.1     8.4      1450       .         3
           81    07JAN82       7.0     8.4      1450       .         5
           82    08JAN82       7.0     8.3      1450       .         4
           83    09JAN82       7.1     8.3      1450       .         5
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                          RIO BLANCO OIL SHALE COMPANY
                    ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                      DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982    TYPE=DAMS    STATION=YCOINJ -----------------

             OBS       DATE        TEMP      PH      COND      FLOW      TSS

              84     10JAN82        7.0     8.1      1450        .         3
              85     11JAN82        8.4     8.2      1400        .         3
              86     12JAN82        8.2     8.1      1400        .         4
              87     13JAN82        8.5     8.2      1475        .         1
              88     14JAN82        8.5     8.1      1450        .         2
              89     15JAN82        6.9     8.0      1425        .         1
              90     16JAN82        8.1     8.1      1450        .         4
              91     17JAN82        8.0     8.1      1425        .         3
              92     18JAN82        8.1     8.0      1400        .         3
              93     19JAN82        9.4     7.8      1350        .         3
              94     20JAN82        9.5     8.0      1350        .         4
              95     21JAN82        9.0     8.2      1475        .         4
              96     22JAN82        9.1     8.3      1450        .         3
              97     23JAN82        9.1     8.3      1450        .         2
              98     24JAN82        8.8     8.2      1450        .         5
              99     25JAN82        9.0     8.2      1475        .         5
             100     26JAN82        8.8     8.0      1450        .         5
             101     27JAN82        9.0     8.1      1425        .         4
             102     28JAN82        8.4     8.1      1450        .         4
             103     29JAN82        8.8     8.2      1450        .         2
             104     30JAN82       10.0     8.3      1475        .         1
             105     31JAN82        8.8     8.2      1475        .         1
             106     01FEB82        8.9     8.2      1450        .         1
             107     02FEB82        9.2     8.2      1475        .         4
             108     03FEB82        7.9     8.2      1450        .         2
             109     04FEB82        7.6     8.2      1475        .         8
             110     05FEB82        6.4     8.2      1450        .         7
             111     06FEB82        8.4     8.2      1450        .         7
             112     07FEB82        8.9     8.1      1450        .         6
             113     08FEB82        9.0     8.2      1450        .         6
             114     09FEB82        9.0     8.2      1450        .         3
             115     10FEB82        9.6     8.1      1450        .         4
             116     11FEB82        8.6     8.2      1400        .         5
             117     12FEB82        8.4     8.3      1450        .         5
             118     13FEB82        8.6     8.2      1425        .         4
             119     14FEB82        8.7     8.2      1425        .         4
             120     15FEB82       11.0     8.1      1450        .         3
             121     16FEB82       11.2     8.1      1450        .         4
             122     17FEB82       11.5     8.1      1450        .         4
             123     18FEB82       11.0     8.1      1450        .         2
             124     19FEB82       11.3     8.1      1400        .         2
             125     20FEB82       11.0     8.3      1425        .         3
             126     21FEB82       11.6     8.3      1425        .         3
             127     22FEB82       10.8     8.2      1400        .         2
             128     23FEB82       12.5     8.0      1450        .         1
             129     24FEB82       12.5     8.2      1450        .         1
             130     25FEB82       12.5     8.2      1450        .         3
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                    RIO BLANCO OIL SHALE COMPANY
              ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YCOINJ ----------------

          OBS      DATE      TEMP     PH     COND     FLOW     TSS

          131    26FEB82     12.5    8.1     1400       .        2
          132    27FEB82     11.8    8.1     1400       .        1
          133    28FEB82     12.0    8.2     1425       .        1
          134    01MAR82     12.2    8.2     1450       .        3
          135    02MAR82     12.1    8.2     1425       .        3
          136    03MAR82     11.8    8.2     1425       .        4
          137    04MAR82     12.2    8.3     1450       .        3
          138    05MAR82     12.0    8.2     1425       .        5
          139    06MAR82     12.1    8.2     1450       .        2
          140    07MAR82     12.0    8.2     1450       .        3
          141    08MAR82     11.0    8.2     1500       .        6
          142    09MAR82     11.0    8.2     1500       .        2
          143    10MAR82     11.5    8.2     1400       .        3
          144    11MAR82     11.3    8.2     1450       .        3
          145    12MAR82     11.6    8.2     1450       .        4
          146    13MAR82     11.0    8.2     1400       .        5
          147    14MAR82     10.9    8.1     1375       .        3
          148    15MAR82     12.3    8.2     1450       .        3
          149    16MAR82     12.3    8.1     1450       .        4
          150    17MAR82     12.1    8.1     1425       .        4
          151    18MAR82     12.0    8.1     1425       .        2
          152    19MAR82     12.0    8.1     1425       .        3
          153    20MAR82     12.2    8.0     1400       .        5
          154    21MAR82     12.2    8.2     1450       .        4
          155    22MAR82     10.2    8.4     1500       .        5
          156    23MAR82     10.2    8.2     1500       .        3
          157    24MAR82     11.0    8.3     1450       .        3
          158    25MAR82     10.8    8.3     1450       .        4
          159    26MAR82     10.3    8.4     1400       .        3
          160    27MAR82     11.4    8.2     1450       .        6
          161    28MAR82     11.7    8.2     1425       .        3
          162    29MAR82     11.5    8.2     1425       .        4
          163    30MAR82     11.0    8.2     1400       .        2
          164    31MAR82     11.3    8.2     1450       .        3
          165    01APR82     11.1    8.2     1425       .        3
          166    02APR82     11.1    8.3     1425       .        5
          167    03APR82     11.0    8.3     1425       .        5
          168    04APR82     10.8    8.2     1400       .        6
          169    05APR82     11.3    8.3     1425       .        4
          170    06APR82     11.0    8.2     1400       .        1
          171    07APR82     10.0    8.1     1450       .        1
          172    08APR82     10.2    8.2     1450       .        2
          173    09APR82     11.0    8.2     1450       .        3
          174    10APR82     10.8    8.2     1450       .        1
          175    11APR82     11.2    8.2     1425       .        4
          176    12APR82     12.5    8.2     1400       .        4
          177    13APR82     13.2    8.2     1425       .        5
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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                    DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982    TYPE=DAMS    STATION=YCOINJ ----------------

             OBS      DATE       TEMP      PH      COND      FLOW      TSS

             178     14APR82     13.1      8.1     1400       .          3
             179     15APR82     13.3      8.2     1425       .          3
             180     16APR82     13.0      8.2     1425       .          2
             181     17APR82     12.8      8.1     1425       .          1
             182     18APR82     12.5      8.1     1425       .          4
             183     19APR82     12.5      8.1     1450       .          4
             184     20APR82     12.8      8.1     1450       .          4
             185     21APR82     12.6      8.1     1450       .          3
             186     22APR82     12.0      8.1     1450       .          4
             187     23APR82     12.2      8.1     1450       .          3
             188     24APR82     12.3      8.1     1425       .          5
             189     25APR82     12.4      8.1     1450       .          4
             190     26APR82     12.5      8.1     1450       .          3
             191     27APR82     12.5      8.1     1500       .          4
             192     28APR82     13.0      8.1     1500       .          2
             193     29APR82     12.4      8.3     1450       .          2
             194     30APR82     12.4      8.3     1450       .          5
             195     01MAY82     12.3      8.0     1450       .          3
             196     02MAY82     12.4      8.1     1450       .          4
             197     03MAY82     16.1      8.3     1400       .          8
             198     04MAY82     15.8      8.3     1425       .          6
             199     05MAY82     16.1      8.3     1400       .          6
             200     06MAY82     12.7      8.3     1400       .          3
             201     07MAY82     12.4      8.2     1425       .          5
             202     08MAY82     12.1      8.3     1425       .          2
             203     09MAY82     12.1      8.3     1425       .          2
             204     10MAY82     12.9      8.3     1425       .          4
             205     11MAY82     12.8      8.3     1400       .          4
             206     12MAY82     12.8      8.3     1400       .          6
             207     13MAY82     12.8      8.3     1400       .          3
             208     14MAY82     12.0      8.4     1450       .          3
             209     15MAY82     12.5      8.3     1450       .          2
             210     16MAY82     13.0      8.2     1450       .          5
             211     17MAY82     14.2      8.2     1450       .          4
             212     18MAY82     14.6      8.2     1425       .          4
             213     19MAY82     14.6      8.2     1425       .          3
             214     20MAY82     14.7      8.2     1425       .          2
             215     21MAY82     14.8      8.2     1450       .          2
             216     22MAY82     15.0      8.0     1450       .          6
             217     23MAY82     15.3      8.3     1450       .          4
             218     24MAY82     15.7      8.4     1450       .          7
             219     25MAY82     16.0      8.4     1450       .          3
             220     26MAY82     16.0      8.4     1450       .          2
             221     27MAY82     16.1      8.3     1450       .          6
             222     28MAY82     15.7      8.3     1450       .          4
             223     29MAY82     15.7      8.3     1450       .          6
             224     01JUN82     16.0      8.1     1450       .          2
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                    RIO BLANCO OIL SHALE COMPANY
             ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
              DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YCOINJ ----------------

           OBS      DATE       TEMP      PH      COND      FLOW      TSS

           225    02JUN82      16.2     8.1      1450        .         3
           226    03JUN82      16.4     8.0      1450        .         2
           227    04JUN82      16.0     8.2      1425        .         1
           228    05JUN82      16.6     8.4      1425        .         2
           229    06JUN82      14.9     8.4      1450        .         4
           230    07JUN82      15.5     8.4      1400        .         1
           231    08JUN82      16.1     8.4      1400        .         4
           232    09JUN82      16.0     8.4      1375        .         3
           233    10JUN82      16.0     8.4      1375        .         2
           234    11JUN82      16.0     8.4      1375        .         1
           235    12JUN82      16.3     8.4      1350        .         2
           236    13JUN82      16.3     8.3      1350        .         4
           237    14JUN82      16.3     8.3      1350        .         3
           238    15JUN82      16.5     8.3      1350        .         2
           239    16JUN82      16.5     8.3      1375        .         2
           240    17JUN82      16.8     8.3      1375        .         3
           241    18JUN82      16.8     8.3      1350        .         1
           242    19JUN82      16.8     8.3      1350        .         1
           243    20JUN82      16.5     8.2      1325        .         4
           244    21JUN82      16.5     8.2      1325        .         4
           245    22JUN82      16.5     8.3      1325        .         2
           246    23JUN82      16.8     8.3      1325        .         3
           247    24JUN82      16.8     8.3      1325        .         1
           248    25JUN82      16.8     8.3      1350        .         3
           249    26JUN82      16.8     8.3      1350        .         3
           250    27JUN82      17.5     8.4      1400        .         4
           251    28JUN82      17.5     8.4      1400        .         4
           252    29JUN82      18.0     8.4      1400        .         3
           253    30JUN82      18.0     8.4      1425        .         4
           254    01JUL82      17.5     8.3      1450        .         3
           255    02JUL82      17.5     8.3      1450        .         3
           256    03JUL82      17.7     8.4      1450        .         3
           257    04JUL82      17.7     8.4      1450        .         3
           258    05JUL82      17.8     8.5      1475        .         6
           259    06JUL82      17.7     8.5      1475        .         3
           260    07JUL82      17.9     8.5      1475        .         4
           261    08JUL82      17.9     8.5      1450        .         4
           262    09JUL82      18.1     8.4      1475        .         2
           263    10JUL82      18.1     8.4      1500        .         2
           264    11JUL82      18.0     8.3      1500        .         5
           265    12JUL82      18.0     8.3      1500        .         8
           266    13JUL82      18.3     8.3      1450        .         4
           267    14JUL82      18.0     8.3      1500        .         3
           268    15JUL82      18.0     8.4      1475        .         2
           269    16JUL82      18.0     8.4      1475        .         5
           270    17JUL82      18.0     8.4      1475        .         8
           271    18JUL82      18.1     8.4      1500        .         4
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RIO BLANCO OIL SHALE COMPANY
ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982 TYPE=DAMS STATION=YCOINJ ----------------

OBS	DATE	TEMP	PH	COND	FLOW	TSS
272	19JUL82	18.4	8.4	1500	.	4
273	20JUL82	18.5	8.4	1500	.	4
274	21JUL82	18.5	8.3	1450	.	3
275	22JUL82	18.4	8.3	1450	.	4
276	23JUL82	18.8	8.3	1475	.	6
277	24JUL82	18.6	8.2	1450	.	3
278	25JUL82	18.9	8.3	1450	.	2
279	26JUL82	19.0	8.4	1475	.	2
280	27JUL82	19.0	8.3	1500	.	5
281	28JUL82	19.1	8.3	1400	.	2
282	29JUL82	19.1	8.3	1400	.	2
283	30JUL82	18.6	8.3	1400	.	4
284	31JUL82	18.9	8.3	1400	.	4
285	01AUG82	18.7	8.2	1400	.	4
286	02AUG82	18.9	8.3	1400	.	8
287	03AUG82	19.0	8.2	1300	.	3
288	04AUG82	19.0	8.2	1300	.	6
289	05AUG82	19.0	8.2	1300	.	6
290	06AUG82	19.0	8.2	1300	.	5
291	07AUG82	19.0	8.2	1400	.	4
292	08AUG82	19.0	8.2	1400	.	7
293	09AUG82	19.0	8.3	1400	.	7
294	10AUG82	19.0	8.2	1400	.	7
295	11AUG82	18.6	8.3	1400	.	8
296	12AUG82	18.6	8.3	1425	.	5
297	13AUG82	18.2	8.3	1425	.	4
298	14AUG82	17.8	8.3	1450	.	4
299	15AUG82	17.4	8.3	1425	.	3
300	16AUG82	19.0	8.2	1400	.	4
301	17AUG82	19.5	8.4	1450	.	4
302	18AUG82	20.1	8.2	1400	.	2
303	19AUG82	20.5	8.3	1450	.	2
304	20AUG82	19.5	8.2	1400	.	2
305	21AUG82	19.5	8.2	1450	.	3
306	22AUG82	20.5	8.1	1450	.	6
307	23AUG82	20.5	8.1	1400	.	5
308	24AUG82	20.7	8.2	1350	.	2
309	25AUG82	18.5	8.3	1350	.	3
310	26AUG82	19.0	8.2	1350	.	3
311	27AUG82	18.6	8.0	1500	.	4
312	28AUG82	18.0	8.1	1450	.	7
313	29AUG82	17.9	8.1	1450	.	5
314	30AUG82	17.5	8.3	1400	.	2
315	31AUG82	17.5	8.3	1400	.	3
316	01SEP82	17.7	8.2	1400	.	3
317	02SEP82	19.5	8.2	1400	.	6
318	03SEP82	17.7	8.0	1450	.	4

RIO BLANCO OIL SHALE COMPANY
ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YCOINJ ----------------

OBS	DATE	TEMP	PH	COND	FLOW	TSS
319	04SEP82	16.0	8.0	1450	.	3
320	05SEP82	17.2	8.1	1400	.	2
321	06SEP82	17.5	8.2	1400	.	5
322	07SEP82	16.5	8.0	1450	.	3
323	08SEP82	17.1	8.0	1450	.	2
324	09SEP82	17.4	8.1	1500	.	1
325	10SEP82	16.9	8.1	1500	.	1
326	11SEP82	16.1	8.0	1450	.	2
327	12SEP82	14.5	8.2	1450	.	2
328	13SEP82	14.1	8.3	1500	.	1
329	14SEP82	14.2	8.2	1500	.	3
330	15SEP82	14.6	8.3	1450	.	1
331	16SEP82	13.5	8.2	1500	.	3
332	17SEP82	15.5	8.3	1450	.	4
333	18SEP82	14.6	8.2	1500	.	5
334	19SEP82	15.0	8.3	1550	.	2
335	20SEP82	15.5	8.0	1500	.	4
336	21SEP82	15.7	7.7	1600	.	2
337	22SEP82	15.5	8.0	1650	.	4
338	23SEP82	15.7	7.9	1600	.	8
339	24SEP82	15.5	8.1	1550	.	3
340	25SEP82	14.0	8.1	1500	.	5
341	26SEP82	15.5	8.1	1500	.	6
342	27SEP82	14.5	8.2	1550	.	6
343	28SEP82	14.0	8.1	1500	.	3
344	29SEP82	13.2	7.9	1550	.	2
345	30SEP82	13.5	7.9	1500	.	4
346	01OCT82	13.5	8.1	1500	.	3
347	02OCT82	12.0	8.0	1650	.	2
348	03OCT82	11.9	8.0	1700	.	4
349	04OCT82	12.9	8.1	1400	.	3
350	05OCT82	12.3	7.9	1400	.	3
351	06OCT82	13.0	8.4	1600	.	3
352	07OCT82	12.3	7.8	1400	.	2
353	08OCT82	11.5	8.2	1350	.	4
354	09OCT82	12.4	8.1	1400	.	6
355	10OCT82	12.3	8.1	1400	.	6
356	11OCT82	10.2	7.4	1400	.	4
357	12OCT82	11.5	8.1	1300	.	3
358	13OCT82	11.8	8.1	1300	.	3
359	14OCT82	12.2	8.1	1400	.	5
360	15OCT82	12.5	8.1	1300	.	2
361	16OCT82	12.3	8.0	1400	.	3
362	18OCT82	11.6	7.2	1350	.	5
363	19OCT82	11.8	8.0	1400	.	4
364	20OCT82	9.8	7.7	1300	.	.
365	21OCT82	10.8	8.1	1350	.	.

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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                    DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YCOINJ ----------------

              OBS      DATE       TEMP      PH      COND     FLOW     TSS

              366    22OCT82      10.5      8.1     1400       .        .
              367    23OCT82      10.8      8.1     1450       .        5
              368    24OCT82      11.6      8.1     1400       .        4
              369    25OCT82      12.3      8.1     1450       .        4
              370    26OCT82      10.9      7.8     1400       .        3
              371    27OCT82       9.8      7.9     1450       .        .
              372    28OCT82       9.8      8.3     1300       .        .
              373    29OCT82       9.2      8.1     1300       .        .
              374    30OCT82      10.8      8.1     1450       .        5
              375    31OCT82      10.6      8.1     1400       .        3
              376    01NOV82       9.8      7.6     1350       .        5
              377    02NOV82       8.5      7.7     1350       .        .
              378    03NOV82       8.9      7.8     1350       .        .
              379    08NOV82       8.0      7.9     1500       .        .
              380    09NOV82       9.4      7.7     1550       .        7
              381    10NOV82      10.3      7.9     1600       .        3
              382    11NOV82      10.7      7.7     1550       .        4
              383    12NOV82      10.4      7.5     1600       .        8
              384    15NOV82      10.5      7.0     1600       .        6
              385    16NOV82      12.1      7.6     1550       .        6
              386    17NOV82      11.9      7.6     1550       .        4
              387    18NOV82      12.3      7.5     1500       .        6
              388    19NOV82      11.6      7.4     1550       .        6
              389    20NOV82      10.6      7.6     1500       .        4
              390    21NOV82       9.6      7.6     1500       .        3
              391    22NOV82       9.8      7.6     1500       .        2
              392    23NOV82      10.5      7.6     1450       .        5
              393    24NOV82      10.1      7.6     1450       .        3
              394    25NOV82      10.3      8.0     1475       .        5
              395    26NOV82      10.2      7.9     1450       .        3
              396    27NOV82      10.3      7.8     1425       .        4
              397    28NOV82      10.5      7.8     1450       .        3
              398    29NOV82      10.2      7.6     1450       .        7
              399    30NOV82      10.1      7.7     1450       .        6
              400    01DEC82       8.3      8.0     1425       .        5
              401    02DEC82       8.2      8.0     1425       .        3
              402    03DEC82       8.2      8.0     1425       .        6
              403    04DEC82       8.2      7.9     1450       .        2
              404    05DEC82       8.2      8.0     1450       .        3
              405    06DEC82      11.0      7.9     1400       .        5
              406    07DEC82       9.7      7.7     1500       .        2
              407    08DEC82      10.0      7.9     1450       .        6
              408    09DEC82      11.0      7.5     1450       .        4
              409    10DEC82      11.0      7.8     1450       .        7
              410    11DEC82      10.8      7.9     1400       .        3
              411    12DEC82      11.0      7.9     1400       .        5
              412    13DEC82      10.0      7.7     1400       .        5
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                         RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YCOINJ -----------------

              OBS      DATE       TEMP     PH     COND     FLOW     TSS

              413    14DEC82       9.5    7.9     1400      .        3
              414    15DEC82      10.0    7.7     1400      .        4
              415    16DEC82      10.0    7.9     1425      .        3
              416    17DEC82      10.0    7.7     1450      .        6
              417    18DEC82      10.2    7.6     1400      .        7
              418    19DEC82      10.0    7.6     1400      .        4
              419    20DEC82      10.0    7.4     1350      .        5
              420    21DEC82      10.4    7.7     1400      .        2
              421    22DEC82      11.0    7.9     1425      .        6
              422    23DEC82      10.8    7.9     1450      .        4
              423    24DEC82       9.0    8.0     1425      .        8
              424    25DEC82       9.3    7.9     1450      .        5
              425    26DEC82       9.0    7.8     1425      .        2
              426    27DEC82       8.7    7.9     1400      .        3
              427    28DEC82       9.0    7.8     1450      .        2
              428    29DEC82       8.0    7.6     1400      .        6
              429    30DEC82       8.0    7.8     1400      .        2
              430    31DEC82       8.0    7.4     1450      .        6


---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YERPOND ----------------

              OBS      DATE       TEMP     PH     COND     FLOW     TSS

              431    01JAN82       3.0    9.8     5650      .        .
              432    02JAN82       4.0    9.8     5700      .        .
              433    03JAN82       2.4    9.9     5650      .        .
              434    04JAN82       2.6    9.9     5700      .        .
              435    05JAN82       8.0   10.4     5700      .        .
              436    06JAN82       3.0    9.8     5700      .        .
              437    07JAN82       3.2    8.9     5650      .        .
              438    08JAN82       3.0    9.7     5700      .        .
              439    09JAN82       1.5    9.9     5700      .        .
              440    10JAN82       3.0   10.2     5600      .        .
              441    11JAN82       3.0    9.9     5700      .        .
              442    12JAN82       2.0    9.7     5600      .        .
              443    13JAN82       1.5    9.8     5700      .        .
              444    14JAN82       2.6    9.6     5700      .        .
              445    15JAN82       5.6    9.9     5700      .        .
              446    16JAN82       1.2    8.9     5700      .        .
              447    17JAN82       1.6    8.9     5700      .        .
              448    19JAN82       4.3    9.7     5700      .        .
              449    20JAN82       3.3    9.8     5400      .        .
              450    21JAN82       2.2    9.5     5400      .        .
              451    22JAN82       3.3    9.6     5400      .        .
              452    23JAN82       4.6    9.6     5450      .        .
              453    24JAN82       2.6    9.7     5600      .        .
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                    RIO BLANCO OIL SHALE COMPANY
               ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                 DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YERPOND ----------------

          OBS      DATE       TEMP        PH     COND     FLOW     TSS

          454    25JAN82      1.0        9.9     5000       .       .
          455    26JAN82      2.3        9.7     5200       .       .
          456    27JAN82      4.0        9.9     4900       .       .
          457    28JAN82      2.8        9.9     4850       .       .
          458    29JAN82      3.2        9.9     4800       .       .
          459    30JAN82      2.8        9.9     5000       .       .
          460    31JAN82      3.0       10.2     5000       .       .
          461    01FEB82      2.0        9.9     5000       .       .
          462    02FEB82      1.2        9.9     5050       .       .
          463    03FEB82      2.1        9.9     5100       .       .
          464    04FEB82      1.0        9.9     5100       .       .
          465    05FEB82      1.0        9.9     5000       .       .
          466    23FEB82      9.0        9.9     6400       .       .
          467    24FEB82      9.0        9.9     6450       .       .
          468    25FEB82      9.0        9.9     6450       .       .
          469    26FEB82      9.1        9.8     6375       .       .
          470    27FEB82      8.4        9.8     6400       .       .
          471    28FEB82      8.8        9.8     6400       .       .
          472    01MAR82      7.8       10.0     4600       .       .
          473    02MAR82      7.4       10.0     4650       .       .
          474    03MAR82      7.4       10.0     4800       .       .
          475    04MAR82      7.0        9.8     4600       .       .
          476    05MAR82      7.4        9.9     4900       .       .
          477    06MAR82      7.4       10.0     4900       .       .
          478    07MAR82      7.4        9.8     4800       .       .
          479    08MAR82      5.5        9.8     4500       .       .
          480    09MAR82      6.0        9.8     4600       .       .
          481    10MAR82      7.4        9.8     4650       .       .
          482    11MAR82      6.0        9.8     4700       .       .
          483    12MAR82      7.8        9.8     4600       .       .
          484    13MAR82      6.9        9.8     4700       .       .
          485    14MAR82      7.0        9.9     4800       .       .
          486    15MAR82      8.4        9.8     4700       .       .
          487    16MAR82      8.8        9.8     4750       .       .
          488    17MAR82      6.9        9.8     4700       .       .
          489    18MAR82      7.7        9.8     4800       .       .
          490    19MAR82      9.4        9.7     4750       .       .
          491    20MAR82      9.4        9.7     4700       .       .
          492    21MAR82      9.0        9.8     4800       .       .
          493    22MAR82      5.5       10.2     4800       .       .
          494    23MAR82      7.3       10.0     4800       .       .
          495    24MAR82      8.8       10.0     4800       .       .
          496    25MAR82      8.9        9.9     4900       .       .
          497    26MAR82      8.3       10.0     4900       .       .
          498    27MAR82      8.2        9.8     4850       .       .
          499    28MAR82      8.0        9.9     4900       .       .
          500    29MAR82      6.3        9.9     4900       .       .
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RIO BLANCO OIL SHALE COMPANY
ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982 TYPE=DAMS STATION=YERPOND ----------------

OBS	DATE	TEMP	PH	COND	FLOW	TSS
501	30MAR82	6.0	9.9	4850	.	.
502	31MAR82	6.4	9.9	4800	.	.
503	08APR82	9.9	9.9	4800	.	.
504	16APR82	10.6	9.9	4800	.	.
505	21APR82	10.3	9.9	4700	.	.
506	30APR82	13.1	9.8	4600	.	.
507	06MAY82	10.3	9.8	4600	.	.
508	14MAY82	10.2	9.7	4600	.	.
509	21MAY82	14.0	10.5	4850	.	.
510	25MAY82	13.0	10.2	4800	.	.
511	03JUN82	16.7	10.1	4700	.	.
512	10JUN82	13.0	9.9	5000	.	.
513	16JUN82	10.0	10.0	4800	.	.
514	23JUN82	14.0	10.0	5000	.	.
515	30JUN82	16.0	9.9	5400	.	.
516	08JUL82	18.0	9.7	5400	.	.
517	14JUL82	20.4	10.2	5400	.	.
518	23JUL82	22.6	9.8	5500	.	.
519	28JUL82	21.0	9.9	5600	.	.
520	05AUG82	17.0	9.7	5500	.	.
521	10AUG82	17.0	9.8	5500	.	.
522	19AUG82	22.5	9.7	5400	.	.
523	25AUG82	21.1	9.6	5100	.	.
524	01SEP82	20.5	9.6	5750	.	.
525	09SEP82	19.6	9.6	5700	.	.
526	15SEP82	15.6	9.6	5550	.	.
527	22SEP82	16.2	9.7	5500	.	.
528	29SEP82	12.5	9.7	5600	.	.

---------------- REPORT YEAR=1982 TYPE=DAMS STATION=YFLDIS ----------------

OBS	DATE	TEMP	PH	COND	FLOW	TSS
529	01JAN82	4.8	7.9	1500	4	10
530	02JAN82	5.6	7.8	1475	3	9
531	03JAN82	3.6	7.9	1475	2	12
532	04JAN82	4.0	8.0	1500	3	12
533	05JAN82	5.8	7.8	1450	2	8
534	06JAN82	4.0	8.0	1475	2	6
535	07JAN82	3.6	8.0	1475	5	14
536	08JAN82	3.8	8.0	1500	2	18
537	09JAN82	3.8	8.0	1500	6	8
538	10JAN82	4.0	8.0	1500	3	6
539	11JAN82	8.4	7.9	1400	3	6
540	12JAN82	8.2	7.4	1475	4	8
541	13JAN82	6.6	7.6	1500	3	8

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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                   DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982    TYPE=DAMS    STATION=YFLDIS ----------------

             OBS       DATE        TEMP      PH      COND      FLOW      TSS

             542     14JAN82        6.8     7.7      1500        2        10
             543     15JAN82        6.2     7.6      1475        5         7
             544     16JAN82        6.4     7.8      1475        2        10
             545     17JAN82        6.0     7.7      1475        4         6
             546     18JAN82        6.1     7.6      1500        2         9
             547     19JAN82        7.4     7.7      1650        2         9
             548     20JAN82       10.5     7.6      1550        3        15
             549     21JAN82        8.5     7.7      1650        5        12
             550     22JAN82        8.5     7.7      1650        1         8
             551     23JAN82        8.5     7.7      1650        4        10
             552     24JAN82        8.3     7.6      1625        3         7
             553     25JAN82        9.0     7.9      1750        3         6
             554     26JAN82        7.6     7.9      1700        3         8
             555     27JAN82        6.3     7.8      1500        3        12
             556     28JAN82        7.2     7.9      1500        3         7
             557     29JAN82        4.2     7.7      1550        3         7
             558     30JAN82        7.4     8.0      1750        5         4
             559     31JAN82        7.6     7.9      1750        2         6
             560     01FEB82        7.8     7.9      1750        2         8
             561     02FEB82        6.3     7.7      1550        1         3
             562     03FEB82        8.0     7.9      1500        5         3
             563     04FEB82        5.3     7.8      1650        3         3
             564     05FEB82        4.2     7.8      1600        6         5
             565     06FEB82        9.2     7.7      1650        2         6
             566     07FEB82        9.4     7.9      1700        3         4
             567     08FEB82        9.3     7.7      1700        2         5
             568     09FEB82        9.3     7.7      1750        4        11
             569     10FEB82        9.4     7.9      1775        0         8
             570     11FEB82        9.0     8.0      1675        6         6
             571     12FEB82        8.6     7.8      1675        4         6
             572     13FEB82        9.0     7.7      1700        2         4
             573     14FEB82        9.1     7.7      1700        3         5
             574     15FEB82       10.0     7.7      1700        3         5
             575     16FEB82       10.9     7.9      1800        3         6
             576     17FEB82       11.0     7.9      1800        3         6
             577     18FEB82       11.0     7.9      1800        3         7
             578     19FEB82       10.0     7.9      1800        3         6
             579     20FEB82       10.0     7.9      1800        2         5
             580     21FEB82       11.0     7.9      1800        2         5
             581     22FEB82       11.1     7.9      1700        2        24
             582     23FEB82       11.0     8.0      1775        3         6
             583     24FEB82       11.0     8.0      1775        2         5
             584     25FEB82       11.0     8.0      1775        4         4
             585     26FEB82       11.1     7.8      1700        3         8
             586     27FEB82       10.0     7.9      1725        1         7
             587     28FEB82        9.9     8.0      1750        2         3
             588     01MAR82       10.2     8.1      1775        4         6
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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YFLDIS -----------------

          OBS       DATE       TEMP     PH      COND      FLOW     TSS

          589     02MAR82      10.2     8.1     1775         3       8
          590     03MAR82       9.0     8.0     1800         3      10
          591     04MAR82       8.9     8.0     1800         .       6
          592     05MAR82       9.0     8.0     1800         1       6
          593     06MAR82       8.9     8.0     1800         1       7
          594     07MAR82       8.7     8.0     1825         2       5
          595     08MAR82       7.0     8.0     1800         4       7
          596     09MAR82       8.2     8.0     1800         3       7
          597     10MAR82       9.2     8.0     1775         2       6
          598     11MAR82       7.7     7.9     1800         2       5
          599     12MAR82       7.9     7.9     1750         2       4
          600     13MAR82      10.1     7.9     1775         2       6
          601     14MAR82       9.1     7.9     1700         2       6
          602     15MAR82      12.4     8.2     1450        97       3
          603     16MAR82      12.0     8.1     1400       146       4
          604     17MAR82       8.6     7.9     1800         4      13
          605     18MAR82       8.4     7.9     1750         2       8
          606     19MAR82       9.0     7.9     1750         2      11
          607     20MAR82      10.0     7.9     1700         2       9
          608     21MAR82      10.0     8.0     1750         1       9
          609     22MAR82       8.6     8.4     1750         1      12
          610     23MAR82       8.0     7.9     2000         2      11
          611     24MAR82       8.2     7.9     1800         3       7
          612     25MAR82       8.2     8.0     1800         3       9
          613     26MAR82       7.8     8.5     1750         2      11
          614     27MAR82       8.2     8.3     1750         3       6
          615     28MAR82       8.4     8.3     1800         2       8
          616     29MAR82       8.6     8.4     1800         2       6
          617     30MAR82       8.2     8.0     1900         2       3
          618     31MAR82       8.1     8.3     1850         3       3
          619     01APR82       8.5     8.3     1850         2       5
          620     02APR82       8.1     8.4     1850         2       3
          621     03APR82       8.0     8.3     1900         5       2
          622     04APR82       8.0     8.3     1900         2       3
          623     05APR82       8.0     8.0     1800         2      10
          624     06APR82       8.0     7.9     1775         2      11
          625     07APR82       6.0     8.0     1800         1       7
          626     08APR82       7.0     8.0     1800         2       9
          627     09APR82       7.7     8.0     1775         2       8
          628     10APR82       7.0     7.9     1750         2      10
          629     11APR82       7.9     8.0     1750         3      12
          630     12APR82       8.5     8.2     1750         2       4
          631     13APR82       8.9     8.2     1700         2       6
          632     14APR82      10.0     8.2     1700         3       6
          633     15APR82       9.8     8.2     1750         2       7
          634     16APR82       9.9     8.2     1700         2       6
          635     17APR82       8.9     8.1     1725         1       8
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                       RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                    DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YFLDIS ----------------

          OBS      DATE       TEMP     PH      COND     FLOW     TSS

          636    18APR82       8.9     8.1     1725       1        5
          637    19APR82       8.9     8.0     1700       4        7
          638    20APR82       8.3     8.0     1700       2        7
          639    21APR82       8.3     8.0     1700       2        9
          640    22APR82       8.4     8.0     1700       3       11
          641    23APR82       8.3     7.9     1700       3        8
          642    24APR82       8.4     7.8     1700       1       10
          643    25APR82       8.4     7.8     1700       1       12
          644    26APR82       8.1     7.8     1650       2        6
          645    27APR82       8.1     7.7     1650       2        6
          646    28APR82       8.0     7.7     1650       3        8
          647    29APR82       8.4     7.8     1625       .        7
          648    30APR82       8.4     7.8     1625       .        9
          649    01MAY82       8.4     7.8     1600       2        7
          650    02MAY82       8.3     7.8     1600       2        8
          651    03MAY82      13.0     8.0     1600       2        8
          652    04MAY82      12.5     7.8     1650       3        8
          653    05MAY82       8.4     7.8     1600       3       10
          654    06MAY82       8.4     7.9     1650       3        5
          655    07MAY82       8.1     7.9     1650       2        5
          656    08MAY82       8.1     7.8     1700       2        6
          657    09MAY82       8.1     7.9     1650       2        6
          658    10MAY82      10.5     8.0     1600       3        6
          659    11MAY82       8.2     8.0     1600       3        6
          660    12MAY82       8.2     8.0     1600       3       10
          661    13MAY82       8.1     8.0     1650       1        3
          662    14MAY82       8.0     8.0     1550       2        5
          663    15MAY82       8.2     7.9     1550       1        5
          664    16MAY82       8.5     7.9     1550       1        7
          665    17MAY82      10.0     7.9     1550       4        7
          666    18MAY82      10.2     7.9     1550       2        7
          667    19MAY82      10.2     8.0     1500       2        8
          668    20MAY82      11.0     8.0     1500       5        8
          669    21MAY82      11.0     8.0     1550       1        7
          670    22MAY82      11.5     7.5     1500       1        7
          671    23MAY82      11.5     8.0     1500       1        8
          672    24MAY82      12.0     8.1     1500       6        5
          673    25MAY82      12.0     8.0     1550       3        7
          674    26MAY82      12.2     8.0     1550       4        6
          675    27MAY82      12.0     8.0     1500       2        6
          676    28MAY82      12.1     8.0     1500       4        8
          677    29MAY82      11.8     8.0     1500       2        7
          678    30MAY82      12.4     8.0     1500       2        5
          679    31MAY82      12.6     8.0     1500       2        5
          680    01JUN82      12.5     7.8     1475       3        2
          681    02JUN82      12.5     7.8     1475       2        5
          682    03JUN82      13.0     7.8     1500       2        3
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RIO BLANCO OIL SHALE COMPANY
ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982 TYPE=DAMS STATION=YFLDIS ----------------

OBS	DATE	TEMP	PH	COND	FLOW	TSS
683	04JUN82	13.3	7.9	1450	2	3
684	05JUN82	15.0	7.9	1400	3	6
685	06JUN82	13.1	7.9	1400	3	7
686	07JUN82	9.6	8.0	1400	3	14
687	08JUN82	9.9	8.1	1400	4	5
688	09JUN82	10.0	8.1	1425	1	6
689	10JUN82	10.0	8.0	1425	3	6
690	11JUN82	10.0	8.0	1425	2	6
691	12JUN82	10.3	8.0	1400	1	11
692	13JUN82	10.4	8.0	1400	2	10
693	14JUN82	10.4	8.1	1400	2	4
694	15JUN82	10.3	8.1	1400	2	7
695	16JUN82	10.3	8.1	1375	2	3
696	17JUN82	10.3	8.1	1375	3	6
697	18JUN82	10.5	8.1	1375	5	4
698	19JUN82	11.0	8.0	1375	0	3
699	20JUN82	11.0	8.0	1400	0	5
700	21JUN82	11.0	8.0	1400	2	5
701	22JUN82	10.8	7.8	1375	5	6
702	23JUN82	10.8	7.8	1375	1	7
703	24JUN82	11.0	7.8	1375	2	10
704	25JUN82	11.0	7.9	1375	2	6
705	26JUN82	11.0	7.9	1375	2	7
706	27JUN82	11.0	8.0	1400	3	6
707	28JUN82	11.0	8.0	1400	2	6
708	15JUL82	15.8	8.0	1500	2	7
709	16JUL82	15.8	8.0	1500	4	3
710	17JUL82	15.9	8.0	1500	1	3
711	18JUL82	16.0	8.0	1500	2	2
712	19JUL82	16.0	8.1	1500	3	6
713	20JUL82	16.1	8.1	1500	4	3
714	21JUL82	16.4	8.1	1500	2	8
715	22JUL82	16.3	8.1	1500	1	7
716	23JUL82	16.8	8.2	1500	3	9
717	24JUL82	17.2	8.1	1475	2	11
718	25JUL82	18.0	8.1	1500	3	6
719	26JUL82	17.2	8.1	1525	2	8
720	27JUL82	18.0	8.0	1550	2	7
721	28JUL82	18.2	8.0	1500	4	7
722	29JUL82	18.0	8.0	1500	3	6
723	30JUL82	18.0	8.0	1500	3	6
724	31JUL82	18.0	8.0	1500	2	8
725	01AUG82	17.0	8.0	1500	2	8
726	02AUG82	17.0	8.0	1500	2	8
727	03AUG82	17.0	8.0	1500	4	7
728	04AUG82	17.0	8.0	1500	2	8
729	05AUG82	18.0	8.0	1300	3	6

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                              RIO BLANCO OIL SHALE COMPANY
                       ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                         DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YFLDIS -----------------

             OBS       DATE        TEMP      PH      COND     FLOW     TSS

             730     06AUG82       17.8     8.0      1400       2        3
             731     07AUG82       17.8     8.0      1400       3        9
             732     08AUG82       17.5     8.0      1400       1       11
             733     09AUG82       17.8     8.1      1425       3        8
             734     10AUG82       17.8     8.1      1425       1        5
             735     11AUG82       17.8     8.1      1425       3        5
             736     12AUG82       17.9     8.1      1400       3        6
             737     13AUG82       18.0     8.0      1400       3        7
             738     14AUG82       17.8     8.1      1400       3        6
             739     15AUG82       17.7     8.1      1400       3        6
             740     16AUG82       18.5     8.1      1400       .       12
             741     17AUG82       18.0     8.2      1400       .       15
             742     18AUG82       19.5     8.0      1400       .       17
             743     19AUG82       19.5     8.0      1400       .       13
             744     20AUG82       18.5     8.1      1400       .       10
             745     21AUG82       18.5     8.0      1400       .       12
             746     22AUG82       18.4     8.0      1400       .       12
             747     23AUG82       19.0     8.0      1400       .        8
             748     24AUG82       19.5     8.0      1350       .        6
             749     25AUG82       18.5     8.1      1400       .        6
             750     26AUG82       18.6     8.1      1400       .       10
             751     27AUG82       18.5     8.0      1500       .        8
             752     28AUG82       18.1     8.2      1450       .        7
             753     29AUG82       17.5     8.2      1450       .       12
             754     30AUG82       18.3     8.1      1500       .        8
             755     31AUG82       17.7     8.2      1450       .        7
             756     01SEP82       17.5     8.1      1400       .        8
             757     02SEP82       17.5     8.1      1400       .        7
             758     03SEP82       17.5     7.8      1450       .        8
             759     04SEP82       17.5     8.1      1400       .        8
             760     05SEP82       17.5     8.0      1500       .        6
             761     06SEP82       17.5     8.0      1450       .        8
             762     07SEP82       16.5     7.9      1500       .       10
             763     08SEP82       17.2     8.0      1450       .        6
             764     09SEP82       17.3     8.1      1550       .        3
             765     10SEP82       16.5     8.0      1500       .        4
             766     11SEP82       15.8     8.1      1450       .        5
             767     12SEP82       14.0     7.9      1450       .        6
             768     13SEP82       13.5     8.2      1500       .        5
             769     14SEP82       13.5     8.1      1500       .        4
             770     15SEP82       13.6     8.2      1500       .        2
             771     16SEP82       13.0     8.0      1500       .        4
             772     17SEP82       14.5     8.2      1500       .        3
             773     18SEP82       11.6     8.0      1550       .        4
             774     19SEP82       13.5     8.0      1550       .        3
             775     20SEP82       11.8     8.1      1550       .        5
             776     21SEP82       14.1     8.0      1600       .        3
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                         RIO BLANCO OIL SHALE COMPANY
                    ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                      DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YFLDIS ----------------

           OBS      DATE       TEMP     PH     COND     FLOW     TSS

           777     22SEP82     14.3     8.2    1600       .        3
           778     23SEP82     14.5     8.1    1600       .        6
           779     24SEP82     12.6     8.1    1650       .        7
           780     25SEP82     13.5     8.0    1650       .        4
           781     26SEP82     12.5     8.2    1650       .        6
           782     27SEP82     13.5     8.1    1650       .       10
           783     28SEP82     12.4     8.0    1650       .        9
           784     29SEP82     11.7     8.1    1700       .       12
           785     30SEP82     11.8     8.1    1650       .       11
           786     01OCT82     11.8     8.1    1650       .        8
           787     02OCT82     14.0     8.2    1500       .        6
           788     03OCT82     14.0     8.2    1450       .        6
           789     04OCT82     11.1     8.3    1600       .        4
           790     05OCT82     10.4     8.2    1600       .        8
           791     06OCT82      8.6     8.0    1600       .        6
           792     07OCT82      9.9     7.9    1600       .        6
           793     08OCT82      9.4     8.1    1600       .        8
           794     09OCT82      8.6     8.1    1600       .        8
           795     10OCT82      8.8     8.0    1600       .        7
           796     11OCT82      7.5     7.5    1600       .       10
           797     12OCT82      7.6     8.1    1600       .        9
           798     13OCT82      7.8     8.1    1500       .        8
           799     14OCT82      7.8     8.0    1600       .        8
           800     15OCT82      8.8     8.1    1600       .        4
           801     16OCT82      8.6     8.0    1650       .        6
           802     17OCT82      8.8     7.9    1600       .        6
           803     18OCT82      9.5     7.4    1600       .        3
           804     19OCT82      8.0     7.9    1650       .        3
           805     20OCT82      7.4     8.0    1600       .        4
           806     21OCT82      8.3     8.1    1650       .        4
           807     22OCT82      8.1     8.2    1650       .        5
           808     23OCT82      7.6     8.0    1650       .        5
           809     24OCT82      7.8     8.0    1650       .        5
           810     25OCT82      7.6     7.9    1700       .        4
           811     26OCT82      7.6     8.0    1650       .        5
           812     27OCT82      7.5     8.2    1650       .        4
           813     28OCT82      7.3     8.4    1550       .        3
           814     29OCT82      7.0     8.2    1550       .        6
           815     30OCT82      7.7     8.1    1650       .        5
           816     31OCT82      7.6     8.0    1650       .        4
           817     01NOV82      6.9     7.7    1550       .        4
           818     02NOV82      6.1     7.5    1550       .        4
           819     03NOV82      6.0     8.0    1500       .        7
           820     04NOV82      5.6     7.3    1700       .        6
           821     05NOV82      6.3     8.0    1700       .        3
           822     06NOV82      6.4     8.0    1700       .        5
           823     07NOV82      6.1     7.9    1700       .        3
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                              RIO BLANCO OIL SHALE COMPANY
                        ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                          DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982    TYPE=DAMS    STATION=YFLDIS -----------------

            OBS      DATE        TEMP      PH       COND      FLOW      TSS

            824    08NOV82       5.6       8.0      1700       .          4
            825    09NOV82       5.6       7.9      1700       .          6
            826    10NOV82       5.7       8.1      1700       .          6
            827    11NOV82       5.3       8.3      1700       .          4
            828    12NOV82       5.4       8.0      1700       .          7
            829    15NOV82       5.1       7.7      1700       .          4
            830    16NOV82       5.7       8.2      1650       .          4
            831    17NOV82       5.6       8.2      1700       .          6
            832    18NOV82       5.7       8.2      1650       .          5
            833    19NOV82       5.9       8.0      1750       .          3
            834    20NOV82       5.6       8.3      1700       .          3
            835    21NOV82       5.6       7.8      1700       .          4
            836    22NOV82       5.4       7.9      1700       .          4
            837    23NOV82       4.7       7.9      1700       .          5
            838    24NOV82       3.8       7.9      1700       .          3
            839    25NOV82       4.3       7.6      1700       .          3
            840    26NOV82       4.0       7.6      1700       .          2
            841    27NOV82       3.6       8.1      1700       .          6
            842    28NOV82       3.8       8.0      1700       .          5
            843    29NOV82       3.9       7.8      1700       .          3
            844    30NOV82       3.7       8.0      1650       .          7
            845    01DEC82       3.4       7.7      1700       .          4
            846    02DEC82       3.3       7.6      1700       .          7
            847    03DEC82       3.5       7.6      1675       .          3
            848    04DEC82       3.1       7.6      1700       .          5
            849    05DEC82       2.0       7.8      1700       .          5
            850    06DEC82       4.0       7.7      1650       .          4
            851    07DEC82       3.1       7.7      1700       .          7
            852    08DEC82       3.0       7.8      1700       .          3
            853    09DEC82       6.5       7.7      1700       .          4
            854    10DEC82       4.5       7.8      1700       .          7
            855    11DEC82       4.3       7.8      1700       .          5
            856    12DEC82       3.9       7.9      1675       .          7
            857    13DEC82       5.0       7.8      1650       .          6
            858    14DEC82       5.0       7.9      1700       .          3
            859    15DEC82       6.0       7.8      1700       .          4
            860    16DEC82       5.5       7.9      1700       .          7
            861    17DEC82       6.0       7.7      1700       .          4
            862    18DEC82       6.0       7.7      1700       .          7
            863    19DEC82       5.7       7.8      1725       .          5
            864    20DEC82       5.5       7.5      1650       .          2
            865    21DEC82       6.0       7.7      1700       .          3
            866    22DEC82       6.5       8.0      1700       .          4
            867    23DEC82       6.7       8.0      1750       .          2
            868    24DEC82       6.0       7.9      1750       .          6
            869    25DEC82       5.5       8.0      1725       .          7
            870    26DEC82       5.5       7.9      1750       .          5
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                    RIO BLANCO OIL SHALE COMPANY
              ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YFLDIS ----------------

       OBS       DATE       TEMP      PH      COND     FLOW     TSS

       871     27DEC82      5.0      7.8      1800       .        3
       872     28DEC82      5.0      7.9      1800       .        6
       873     29DEC82      5.0      7.8      1700       .        4
       874     30DEC82      4.5      7.9      1700       .        5
       875     31DEC82      4.3      8.0      1750       .        7

--------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YJEFFPOND --------------

       OBS       DATE       TEMP      PH      COND     FLOW     TSS

       876     01JAN82     10.8      8.2      1425       .        .
       877     02JAN82     11.6      8.2      1450       .        .
       878     03JAN82     12.1      8.2      1425       .        .
       879     04JAN82     10.6      8.2      1475       .        .
       880     05JAN82     12.5      8.2      1450       .        .
       881     06JAN82     11.0      8.2      1450       .        .
       882     07JAN82     11.6      8.3      1425       .        .
       883     08JAN82      9.6      8.2      1425       .        .
       884     09JAN82     12.0      8.2      1425       .        .
       885     10JAN82     12.0      8.2      1425       .        .
       886     11JAN82      8.6      8.2      1500       .        .
       887     12JAN82      7.4      8.2      1500       .        .
       888     13JAN82     12.0      8.0      1425       .        .
       889     14JAN82      7.7      8.1      1450       .        .
       890     15JAN82      7.5      8.2      1450       .        .
       891     16JAN82     12.4      8.2      1425       .        .
       892     17JAN82     12.9      8.2      1425       .        .
       893     18JAN82     11.2      8.1      1450       .        .
       894     19JAN82      9.6      8.2      1425       .        .
       895     20JAN82      7.2      8.3      1425       .        .
       896     21JAN82      8.2      8.3      1425       .        .
       897     22JAN82     11.6      8.3      1450       .        .
       898     23JAN82      9.5      8.3      1450       .        .
       899     24JAN82      9.9      8.2      1425       .        .
       900     25JAN82     13.5      8.2      1500       .        .
       901     26JAN82      9.3      8.2      1475       .        .
       902     27JAN82     13.0      8.2      1450       .        .
       903     28JAN82     12.4      8.2      1500       .        .
       904     29JAN82     12.4      8.2      1450       .        .
       905     30JAN82      9.1      8.1      1450       .        .
       906     31JAN82      9.8      8.3      1425       .        .
       907     01FEB82      8.1      8.2      1450       .        .
       908     02FEB82     10.2      8.2      1450       .        .
       909     03FEB82      8.6      8.3      1450       .        .
       910     04FEB82     10.3      8.2      1400       .        .
       911     05FEB82     10.4      8.2      1450       .        .
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                        RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                    DEVELOPMENT ACTIVITIES MONITORING DATA

--------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YJEFFPOND ---------------

          OBS      DATE       TEMP     PH      COND     FLOW     TSS

          912    06FEB82      10.8     8.2     1425       .        .
          913    07FEB82      10.9     8.2     1400       .        .
          914    08FEB82       9.1     8.3     1450       .        .
          915    09FEB82       8.1     8.2     1450       .        .
          916    10FEB82       8.2     8.3     1425       .        .
          917    11FEB82      11.0     8.2     1400       .        .
          918    12FEB82       9.1     8.2     1425       .        .
          919    13FEB82      11.4     8.2     1425       .        .
          920    14FEB82      11.4     8.2     1425       .        .
          921    15FEB82      13.4     8.2     1425       .        .
          922    16FEB82      13.6     8.2     1425       .        .
          923    17FEB82      12.6     8.2     1425       .        .
          924    18FEB82      14.0     8.3     1400       .        .
          925    19FEB82      13.5     8.2     1425       .        .
          926    20FEB82      11.5     8.2     1425       .        .
          927    21FEB82      12.0     8.3     1425       .        .
          928    22FEB82      11.1     8.3     1450       .        .
          929    23FEB82      14.5     8.2     1450       .        .
          930    24FEB82      14.0     8.2     1500       .        .
          931    25FEB82      14.0     8.2     1500       .        .
          932    26FEB82      14.2     8.2     1400       .        .
          933    27FEB82      15.0     8.2     1425       .        .
          934    28FEB82      15.4     8.2     1400       .        .
          935    01MAR82      13.5     8.3     1400       .        .
          936    02MAR82      13.5     8.3     1400       .        .
          937    03MAR82      13.6     8.3     1400       .        .
          938    04MAR82      12.9     8.2     1400       .        .
          939    05MAR82      13.4     8.2     1425       .        .
          940    06MAR82      13.7     8.2     1450       .        .
          941    07MAR82      13.9     8.2     1400       .        .
          942    08MAR82      13.5     8.2     1450       .        .
          943    09MAR82      12.6     8.2     1400       .        .
          944    10MAR82      13.7     8.3     1400       .        .
          945    11MAR82      14.0     8.2     1400       .        .
          946    12MAR82      13.8     8.2     1400       .        .
          947    13MAR82      13.1     8.2     1425       .        .
          948    14MAR82      13.5     8.2     1400       .        .
          949    15MAR82      13.6     8.2     1400       .        .
          950    16MAR82      13.8     8.3     1400       .        .
          951    17MAR82      13.9     8.3     1450       .        .
          952    18MAR82      14.4     8.3     1450       .        .
          953    19MAR82      14.0     8.2     1425       .        .
          954    20MAR82      14.2     8.3     1450       .        .
          955    21MAR82      13.3     8.2     1400       .        .
          956    22MAR82      12.1     8.3     1475       .        .
          957    23MAR82      12.1     8.3     1500       .        .
          958    24MAR82      12.0     8.3     1450       .        .
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                     RIO BLANCO OIL SHALE COMPANY
               ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                 DEVELOPMENT ACTIVITIES MONITORING DATA

--------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YJEFFPOND ---------------

        OBS      DATE       TEMP     PH      COND     FLOW     TSS

        959    25MAR82      12.3     8.2     1450        .       .
        960    26MAR82      12.2     8.3     1425        .       .
        961    27MAR82      13.0     8.2     1450        .       .
        962    28MAR82      13.1     8.3     1450        .       .
        963    29MAR82      13.5     8.2     1425        .       .
        964    30MAR82      13.6     8.0     1450        .       .
        965    08APR82      13.3     8.2     1450     1194       .
        966    16APR82      13.9     8.6     1400     1201       .
        967    21APR82      13.0     8.1     1450     1195       .
        968    29APR82      13.1     8.3     1450     1192       .
        969    30APR82      14.7     8.5     1400     1195       .
        970    06MAY82      13.0     8.3     1425     1192       .
        971    14MAY82      13.3     8.3     1400     1182       .
        972    21MAY82      14.9     7.9     1300     1178       .
        973    25MAY82      16.3     8.4     1450     1177       .
        974    03JUN82      16.3     8.4     1450     1166       .
        975    10JUN82      15.8     8.4     1400     1153       .
        976    16JUN82      16.0     8.4     1400     1151       .
        977    22JUN82      16.1     8.4     1350     1110       .
        978    08JUL82      17.8     8.4     1450     1048       .
        979    14JUL82      16.6     9.1     1500     1048       .
        980    23JUL82      17.6     8.1     1300     1041       .
        981    28JUL82      18.0     8.3     1400     1039       .
        982    05AUG82      18.0     8.2     1400     1029       .
        983    10AUG82      18.0     8.3     1400     1034       .
        984    19AUG82      16.5     8.2     1400     1044       .
        985    25AUG82      16.1     8.3     1350      985       .
        986    01SEP82      16.4     8.2     1450      938       .

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YMET3 ----------------

        OBS      DATE       TEMP     PH      COND     FLOW     TSS

        987    05JAN82       7.7     7.7     1400        .       .
        988    06JAN82       5.5     7.9     1450        .       .
        989    07JAN82       6.6     7.9     1450        .       .
        990    08JAN82       6.6     7.8     1425        .       .
        991    11JAN82       8.3     7.8     1400        .       .
        992    12JAN82       7.3     7.7     1425        .       .
        993    13JAN82       8.1     7.8     1425     1137       .
        994    14JAN82       8.0     7.8     1425        .       .
        995    15JAN82       8.8     7.8     1450        .       .
        996    18JAN82       8.8     7.9     1375        .       .
        997    19JAN82       8.8     7.5     1350        .       .
        998    20JAN82       9.1     7.4     1400        .       .
        999    21JAN82       8.6     7.7     1400        .       .
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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     DEVELOPMENT ACTIVITIES MONITORING DATA

----------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YMET3 -----------------

              OBS      DATE      TEMP      PH      COND      FLOW      TSS

              1000    22JAN82     8.3     7.6      1400        .         .
              1001    25JAN82    10.0     7.7      1450        .         .
              1002    26JAN82     9.8     7.7      1450        .         .
              1003    27JAN82     8.4     7.9      1400        .         .
              1004    28JAN82     8.3     7.8      1400        .         .
              1005    29JAN82     8.3     7.8      1425        .         .
              1006    01FEB82     7.9     7.7      1425        .         .
              1007    02FEB82     7.6     7.9      1450        .         .
              1008    03FEB82     6.6     7.8      1400        .         .
              1009    04FEB82     6.8     7.9      1450        .         .
              1010    05FEB82     5.8     7.9      1450        .         .
              1011    08FEB82     7.9     7.6      1425        .         .
              1012    09FEB82     6.9     7.7      1425        .         .
              1013    10FEB82     6.9     7.7      1425        .         .
              1014    11FEB82     8.0     7.7      1400        .         .
              1015    12FEB82     8.1     7.6      1400        .         .
              1016    15FEB82    10.0     8.0      1400        .         .
              1017    16FEB82    10.0     8.0      1450        .         .
              1018    17FEB82    10.0     7.8      1350        .         .
              1019    18FEB82     9.0     7.7      1300        .         .
              1020    19FEB82     8.0     7.8      1475        .         .
              1021    22FEB82     8.1     7.7      1400        .         .
              1022    23FEB82     6.0     7.7       900        .         .
              1023    24FEB82    12.0     8.0      1500        .         .
              1024    25FEB82    12.0     8.0      1500        .         .
              1025    26FEB82    12.0     8.0      1500        .         .
              1026    01MAR82    11.6     8.0      1400        .         .
              1027    02MAR82     9.0     8.1      1425        .         .
              1028    03MAR82     9.0     8.0      1400        .         .
              1029    04MAR82    10.2     8.0      1450        .         .
              1030    05MAR82     9.0     8.0      1400        .         .
              1031    08MAR82    10.0     7.8      1500        .         .
              1032    09MAR82    10.2     8.0      1450        .         .
              1033    10MAR82    11.8     8.0      1450        .         .
              1034    11MAR82    11.0     7.9      1400        .         .
              1035    12MAR82    11.0     8.0      1400        .         .
              1036    15MAR82    11.0     8.0      1425        .         .
              1037    16MAR82    11.4     8.0      1450        .         .
              1038    17MAR82    11.4     8.0      1450        .         .
              1039    18MAR82    11.3     7.9      1450        .         .
              1040    19MAR82    11.3     7.9      1425        .         .
              1041    22MAR82    10.2     7.7      1500        .         .
              1042    23MAR82     8.8     7.7      1500        .         .
              1043    24MAR82     9.2     7.7      1500        .         .
              1044    25MAR82    13.3     7.9      1400        .         .
              1045    26MAR82    13.1     7.9      1400        .         .
              1046    29MAR82     9.0     7.8      1400        .         .
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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YMET3 ----------------

         OBS      DATE       TEMP      PH      COND      FLOW       TSS

         1047    30MAR82      9.0      7.8     1400        .         .
         1048    31MAR82     13.0      7.8     1450        .         .
         1049    08APR82     12.0      8.0     1400        .         .
         1050    16APR82     12.8      8.1     1350        .         .
         1051    21APR82     12.9      7.9     1400        .         .
         1052    29APR82     13.0      7.8     1400        .         .
         1053    30APR82     10.1      7.8     1350        .         .
         1054    06MAY82     13.2      7.9     1425        .         .
         1055    14MAY82     12.0      7.9     1400      488.0       .
         1056    21MAY82     13.3      7.4     1100      542.0       .
         1057    25MAY82     19.2      8.3     1100      452.0       .
         1058    03JUN82     17.0      8.4     1200      419.0       .
         1059    10JUN82     15.8      7.5     1250      398.0       .
         1060    16JUN82     14.2      7.8     1375      367.0       .
         1061    22JUN82     14.9      7.9     1375      340.0       .
         1062    30JUN82     14.8      7.9     1400      300.0       .
         1063    08JUL82     17.0      7.9     1400      359.0       .
         1064    14JUL82     15.5      8.2     1450      430.0       .
         1065    23JUL82     14.8      7.8     1200      376.0       .
         1066    28JUL82     15.0      7.6     1375      383.0       .
         1067    05AUG82     16.3      7.8     1400      304.0       .
         1068    10AUG82     16.8      7.7     1350        .         .
         1069    19AUG82     16.0      7.9     1400      542.0       .
         1070    25AUG82     14.4      8.0     1250      495.0       .
         1071    01SEP82     12.5      8.1     1400      208.0       .
         1072    09SEP82     13.4      8.1     1450      201.0       .
         1073    15SEP82     12.1      8.0     1400        .         .
         1074    22SEP82     10.7      8.0     1450      250.0       .
         1075    29SEP82     10.6      8.0     1400      302.5       .
         1076    06OCT82     10.0      7.9     1500      281.4       .
         1077    13OCT82     11.6      7.5     1250      284.1       .
         1078    20OCT82     10.8      7.6     1400      230.2       .
         1079    29OCT82      9.7      7.7     1250      203.3       .
         1080    04NOV82     10.2      7.6     1400      189.9       .
         1081    10NOV82      7.9      7.6     1300      219.0       .
         1082    17NOV82      9.3      7.6     1400      203.3       .
         1083    24NOV82      7.4      7.8     1400        .         .
         1084    06DEC82     11.5      7.6     1400      216.8       .
         1085    14DEC82      9.0      7.4     1400      216.8       .
         1086    22DEC82     10.0      7.6     1400      216.8       .
         1087    29DEC82      8.0      7.5     1400        .         .

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YPZR-1 ----------------

         OBS      DATE       TEMP      PH      COND      FLOW       TSS
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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                    DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YPZR-1 ----------------

             OBS       DATE       TEMP      PH      COND     FLOW     TSS

             1088     24MAR82     8.6       7.7     1100       .        .

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YPZR-4 ----------------

             OBS       DATE       TEMP      PH      COND     FLOW     TSS

             1089     24MAR82     8.3       7.8     1050       .        .

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YSEOFL ----------------

             OBS       DATE       TEMP      PH      COND     FLOW     TSS

             1090     05JAN82      3.4      7.3     1975     132        .
             1091     06JAN82      2.4      7.8     1950     140        .
             1092     07JAN82      3.4      7.8     1900     132        .
             1093     08JAN82      1.6      8.0     1975     132        .
             1094     11JAN82      3.6      8.0     1975     132        .
             1095     12JAN82      3.6      8.0     2000     132        .
             1096     13JAN82      4.9      8.0     1950     132        .
             1097     14JAN82      3.5      7.6     1900     132        .
             1098     15JAN82      2.8      7.4     1900     132        .
             1099     18JAN82      2.5      7.3     1900     132        .
             1100     19JAN82      3.8      7.2     1750     140        .
             1101     20JAN82      2.5      7.6     1850     132        .
             1102     21JAN82      3.2      8.0     1975     132        .
             1103     22JAN82      2.3      8.0     1950     132        .
             1104     25JAN82      3.0      7.7     2000     132        .
             1105     26JAN82      3.1      7.8     2000     132        .
             1106     27JAN82      3.6      7.8     2000     132        .
             1107     28JAN82      2.6      8.0     2000     132        .
             1108     29JAN82      2.5      7.9     1950     132        .
             1109     01FEB82      3.1      7.8     2000     132        .
             1110     02FEB82      3.8      7.7     2000     132        .
             1111     03FEB82      2.6      7.8     2000     132        .
             1112     04FEB82      3.9      7.8     1950     132        .
             1113     05FEB82      4.0      7.7     2000     124        .
             1114     08FEB82      3.1      8.1     2000     140        .
             1115     09FEB82      2.0      8.0     2050     132        .
             1116     10FEB82      2.0      8.0     2025     132        .
             1117     11FEB82      2.0      7.8     1950     132        .
             1118     12FEB82      2.3      7.9     2000     132        .
             1119     15FEB82      4.0      7.8     2000     140        .
             1120     16FEB82      3.0      7.8     2000     140        .
             1121     17FEB82      3.0      7.9     1500     166        .
             1122     18FEB82      5.0      7.7      925     426        .
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                         RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YSEOFL ----------------

          OBS       DATE        TEMP      PH      COND      FLOW      TSS

          1123     19FEB82       2.0      7.8     1725     157.0       .
          1124     22FEB82       4.6      7.3     1100     124.0       .
          1125     23FEB82       7.5      7.9     1600     193.0       .
          1126     24FEB82      11.0      8.0     1900     157.0       .
          1127     25FEB82      11.0      8.0     1900     157.0       .
          1128     26FEB82      11.0      8.0     1900     157.0       .
          1129     01MAR82       6.6      7.8     1900     148.0       .
          1130     02MAR82       6.0      7.9     1900     148.0       .
          1131     03MAR82       7.0      7.8     2000     157.0       .
          1132     04MAR82       6.9      7.9     2000     157.0       .
          1133     05MAR82       7.1      7.8     1950     157.0       .
          1134     08MAR82       3.5      8.0     2000     157.0       .
          1135     09MAR82       7.6      7.9     2000     157.0       .
          1136     10MAR82       7.9      7.9     2000     157.0       .
          1137     11MAR82       7.0      7.9     2000     157.0       .
          1138     12MAR82       7.0      7.8     2000     157.0       .
          1139     15MAR82      12.0      8.1     2000     148.0       .
          1140     16MAR82      12.4      8.1     1950     148.0       .
          1141     17MAR82      12.3      8.1     1950     148.0       .
          1142     18MAR82      12.4      8.1     2000     148.0       .
          1143     19MAR82      12.5      8.1     2000     148.0       .
          1144     22MAR82       6.9      7.9     1900     157.0       .
          1145     23MAR82       6.1      7.9     1900     157.0       .
          1146     24MAR82       6.6      7.9     1950     157.0       .
          1147     25MAR82      13.0      8.1     1850     157.0       .
          1148     26MAR82      10.6      8.2     1875     148.0       .
          1149     29MAR82       4.2      7.9     2000     157.0       .
          1150     30MAR82       4.2      7.9     2000     157.0       .
          1151     31MAR82      13.0      7.9     2000     148.0       .
          1152     29APR82      12.8      8.0     1850     140.0       .
          1153     26MAY82      22.5      7.7     1700         .       .
          1154     14JUN82      16.5      7.5     2000         .       .
          1155     24AUG82      20.0      8.0     1700     193.0       .
          1156     17SEP82      13.8      8.1     1800     206.0       .
          1157     06OCT82       5.5      8.0     2050     318.6       .
          1158     18NOV82       4.5      7.5     1800     242.4       .
          1159     14DEC82       1.4      7.7     1700      76.3       .
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                    RIO BLANCO OIL SHALE COMPANY
              ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
               DEVELOPMENT ACTIVITIES MONITORING DATA

--------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YSWPOND-1 --------------

          OBS      DATE       TEMP      PH     COND     FLOW     TSS

          1160   19MAR82       8.0     9.7    23000       .       .
          1161   25MAR82       8.0     9.6    23000       .       .
          1162   08APR82      12.5     9.4    34500       .       .
          1163   16APR82      13.0     9.5    34000       .       .
          1164   30APR82      13.0     9.6    34000       .       .
          1165   06MAY82      13.3     9.5    33500       .       .
          1166   14MAY82      18.0     9.9    36000       .       .
          1167   21MAY82      18.5    10.1    36400       .       .
          1168   25MAY82      16.6     9.8    36800       .       .
          1169   09JUN82      18.0     9.7    36000       .       .
          1170   16JUN82      19.0     9.6    36000       .       .
          1171   23JUN82      19.0     9.7    36000       .       .
          1172   30JUN82      19.0     9.4    38000       .       .
          1173   07JUL82      22.0     9.5    40000       .       .
          1174   14JUL82      22.2     9.8    44000       .       .
          1175   21JUL82      24.1     9.4    47000       .       .
          1176   28JUL82      24.0     9.4    48000       .       .
          1177   04AUG82      24.0     9.4    48000       .       .
          1178   18AUG82      24.5     9.1    49500       .       .
          1179   25AUG82      20.5     9.2    47000       .       .
          1180   01SEP82      21.5     9.2    48000       .       .
          1181   08SEP82      21.0     9.2    48000       .       .
          1182   15SEP82      17.8     9.5    21500       .       .
          1183   22SEP82      20.1     9.3    35500       .       .
          1184   30SEP82      10.1     9.3    28500       .       .

-------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YSWPOND-10 -------------

          OBS      DATE       TEMP      PH     COND     FLOW     TSS

          1185   25MAY82      20.0     8.3     4100       .       .
          1186   14JUL82      21.6     8.3     3600       .       .
          1187   21JUL82      22.5     7.8     3800       .       .
          1188   28JUL82      23.0     7.7     3800       .       .
          1189   04AUG82      24.0     7.8     3900       .       .
          1190   18AUG82      21.5     7.8     3850       .       .
          1191   25AUG82      19.3     7.7     3700       .       .
          1192   01SEP82      22.5     7.7     4200       .       .
          1193   08SEP82      23.0     7.8     4200       .       .
          1194   15SEP82      11.6     7.8     3700       .       .
          1195   22SEP82      15.2     7.6     3900       .       .
          1196   30SEP82      11.2     7.7     3800       .       .
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                      RIO BLANCO OIL SHALE COMPANY
                 ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                   DEVELOPMENT ACTIVITIES MONITORING DATA

-------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YSWPOND-11 --------------

          OBS      DATE       TEMP      PH      COND      FLOW      TSS

          1197    02MAR82      2.0      .         .         .        .
          1198    19MAR82      5.5     8.1      3900        .        .
          1199    25MAR82      5.6     8.1      3800        .        .
          1200    08APR82     11.0     7.9      3450        .        .
          1201    16APR82     10.8     7.9      3500        .        .
          1202    30APR82     11.7     7.9      3450        .        .
          1203    06MAY82     12.0     8.0      3400        .        .
          1204    14MAY82     18.0     8.1      3500        .        .
          1205    21MAY82     22.9     8.3      3600        .        .
          1206    25MAY82     21.0     8.3      4000        .        .
          1207    09JUN82     25.0     7.8      4000        .        .
          1208    16JUN82     23.0     7.8      4100        .        .
          1209    23JUN82     23.0     7.9      3900        .        .
          1210    30JUN82     21.0     7.8      4000        .        .
          1211    07JUL82     23.0     7.7      4075        .        .
          1212    14JUL82     21.1     8.1      3900        .        .
          1213    21JUL82     25.6     7.7      4300        .        .
          1214    28JUL82     25.0     7.7      4400        .        .
          1215    04AUG82     25.0     7.9      4500        .        .
          1216    18AUG82     21.5     7.7      3750        .        .
          1217    25AUG82     20.2     7.6      3600        .        .
          1218    01SEP82     20.4     7.7      3800        .        .
          1219    08SEP82     20.0     7.8      3900        .        .
          1220    15SEP82     10.5     7.7      3250        .        .
          1221    22SEP82     14.6     7.7      3100        .        .
          1222    30SEP82     12.5     7.7      3000        .        .


-------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YSWPOND-12 --------------

          OBS      DATE       TEMP      PH      COND      FLOW      TSS

          1223    25MAY82     20.0     8.3      4100        .        .
          1224    09JUN82     24.5     7.8      3900        .        .
          1225    16JUN82     23.0     7.8      3900        .        .
          1226    23JUN82     23.0     7.9      3900        .        .
          1227    30JUN82     20.0     7.8      4050        .        .
          1228    07JUL82     21.5     7.7      4200        .        .
          1229    14JUL82     20.5     8.0      4300        .        .
          1230    21JUL82     19.2     7.7      4600        .        .
          1231    28JUL82     22.0     7.7      4600        .        .
          1232    04AUG82     23.0     7.8      4600        .        .
          1233    18AUG82     22.0     7.3      4750        .        .
          1234    25AUG82     19.2     7.3      4700        .        .
          1235    01SEP82     22.7     7.3      5150        .        .
          1236    08SEP82     23.0     7.5      5200        .        .
          1237    15SEP82     11.9     7.3      4700        .        .
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                         RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                    DEVELOPMENT ACTIVITIES MONITORING DATA

-------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YSWPOND-12 --------------

          OBS      DATE       TEMP     PH      COND     FLOW     TSS

          1238    22SEP82     14.4     7.2     4850      .        .
          1239    30SEP82     12.2     7.1     4800      .        .

--------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YSWPOND-2 ---------------

         OBS      DATE       TEMP       PH      COND      FLOW     TSS

         1240    19MAR82      9.0      9.4     12000       .        .
         1241    25MAR82      9.1      9.6     12500       .        .
         1242    08APR82     12.6      9.5     20000       .        .
         1243    16APR82     13.0      9.4     20000       .        .
         1244    30APR82     13.0      9.7     20000       .        .
         1245    06MAY82     13.0      9.7     20000       .        .
         1246    14MAY82     17.0      9.8     26000       .        .
         1247    21MAY82     17.5     10.1     26400       .        .
         1248    25MAY82     17.0      9.7     27000       .        .
         1249    09JUN82     18.0      9.7     21000       .        .
         1250    16JUN82     19.0      9.7     21000       .        .
         1251    23JUN82     20.0      9.6     21000       .        .
         1252    30JUN82     19.0      9.4     26000       .        .
         1253    07JUL82     20.0      9.4     36000       .        .
         1254    14JUL82     22.7      9.7     41000       .        .
         1255    21JUL82     23.5      9.4     48000       .        .
         1256    28JUL82     24.0      9.4     48000       .        .
         1257    04AUG82     24.0      9.3     50000       .        .
         1258    18AUG82     24.5      9.2     46000       .        .
         1259    25AUG82     21.5      9.3     45500       .        .
         1260    01SEP82     20.5      9.2     45000       .        .
         1261    08SEP82     21.0      9.2     46000       .        .
         1262    15SEP82     17.9      9.4     22500       .        .
         1263    22SEP82     20.2      9.3     34000       .        .
         1264    30SEP82     10.7      9.3     29000       .        .

--------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YSWPOND-3 ---------------

          OBS      DATE       TEMP     PH      COND     FLOW     TSS

          1265    19MAR82      7.5     7.9     6800      .        .
          1266    25MAR82      7.6     7.9     6900      .        .
          1267    08APR82     15.0     8.2     7500      .        .
          1268    16APR82     13.3     8.2     7450      .        .
          1269    30APR82     15.4     8.0     7450      .        .
          1270    06MAY82     13.0     8.0     7500      .        .
          1271    14MAY82     21.0     8.3     7800      .        .
          1272    21MAY82     21.0     8.4     8000      .        .
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                         RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     DEVELOPMENT ACTIVITIES MONITORING DATA

--------------- REPORT YEAR=1982    TYPE=DAMS    STATION=YSWPOND-3 ---------------

              OBS       DATE       TEMP      PH       COND      FLOW      TSS

              1273     25MAY82     19.0      8.2      7800       .         .
              1274     09JUN82     19.0      8.0      8000       .         .
              1275     16JUN82     19.5      8.1      8100       .         .
              1276     23JUN82     21.0      8.1      8100       .         .
              1277     30JUN82     19.0      7.9      8500       .         .
              1278     07JUL82     21.0      7.9      9500       .         .
              1279     14JUL82     23.8      8.3      8800       .         .
              1280     21JUL82     24.5      7.8      9400       .         .
              1281     28JUL82     24.5      8.0      9500       .         .
              1282     04AUG82     24.8      8.0      9700       .         .
              1283     18AUG82     25.5      7.7      8600       .         .
              1284     25AUG82     21.1      7.8      8300       .         .
              1285     01SEP82     20.6      7.8      8850       .         .
              1286     08SEP82     20.0      7.9      8800       .         .
              1287     15SEP82     16.5      7.9      8900       .         .
              1288     22SEP82     16.7      7.8      8800       .         .
              1289     30SEP82     12.8      7.9      8950       .         .

--------------- REPORT YEAR=1982    TYPE=DAMS    STATION=YSWPOND-4 ---------------

              OBS       DATE       TEMP      PH       COND      FLOW      TSS

              1290     19MAR82      6.5      7.9      4800       .         .
              1291     25MAR82      6.6      7.9      4800       .         .
              1292     08APR82     15.2      8.2      7600       .         .
              1293     16APR82     13.5      8.2      7500       .         .
              1294     30APR82     10.4      8.2      7600       .         .
              1295     06MAY82     15.1      8.1      7600       .         .
              1296     14MAY82     21.0      8.6      8000       .         .
              1297     21MAY82     21.2      8.6      8200       .         .
              1298     25MAY82     19.0      8.2      8000       .         .
              1299     09JUN82     19.0      8.0      8200       .         .
              1300     16JUN82     19.6      8.1      8300       .         .
              1301     23JUN82     21.0      8.1      8350       .         .
              1302     30JUN82     21.0      8.1      8700       .         .
              1303     07JUL82     20.0      8.0      9600       .         .
              1304     14JUL82     21.1      8.5      9100       .         .
              1305     21JUL82     21.1      8.0      9600       .         .
              1306     28JUL82     22.0      8.0      9600       .         .
              1307     04AUG82     22.3      8.0      9700       .         .
              1308     18AUG82     22.0      7.9      8800       .         .
              1309     25AUG82     18.6      7.9      8400       .         .
              1310     01SEP82     20.3      7.8      8800       .         .
              1311     08SEP82     20.0      7.8      8800       .         .
              1312     15SEP82     11.2      8.0      8900       .         .
              1313     22SEP82     13.5      8.0      8900       .         .
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                           RIO BLANCO OIL SHALE COMPANY
                    ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                      DEVELOPMENT ACTIVITIES MONITORING DATA

--------------- REPORT YEAR=1982    TYPE=DAMS    STATION=YSWPOND-4 ---------------

           OBS        DATE        TEMP      PH        COND       FLOW       TSS

           1314     30SEP82      9.4       8.1       8800         .          .

--------------- REPORT YEAR=1982    TYPE=DAMS    STATION=YSWPOND-5 ---------------

           OBS        DATE        TEMP      PH        COND        FLOW       TSS

           1315     19MAR82        9.0     9.7       20000         .          .
           1316     25MAR82        9.0     9.7       21000         .          .
           1317     08APR82       13.0     9.3       26000         .          .
           1318     16APR82       14.0     9.4       26500         .          .
           1319     30APR82       14.0     9.4       28000         .          .
           1320     06MAY82       14.0     9.5       28500         .          .
           1321     14MAY82       21.5     9.2       33000         .          .
           1322     21MAY82       21.3     9.2       33300         .          .
           1323     25MAY82       19.0     9.5       32500         .          .
           1324     09JUN82       20.0     9.6       33000         .          .
           1325     16JUN82       21.0     9.5       32000         .          .
           1326     23JUN82       22.0     9.7       32000         .          .
           1327     30JUN82       21.0     9.0       33000         .          .
           1328     07JUL82       20.5     9.1       48000         .          .
           1329     14JUL82       22.5     9.4       49000         .          .
           1330     21JUL82       23.5     9.2       53000         .          .
           1331     28JUL82       24.0     9.2       53000         .          .
           1332     04AUG82       24.0     9.2       55000         .          .
           1333     18AUG82       24.5     8.8       57000         .          .
           1334     25AUG82       21.7     9.0       57000         .          .
           1335     01SEP82       19.5     9.1       56000         .          .
           1336     08SEP82       20.0     9.0       56000         .          .
           1337     15SEP82       16.8     9.2       27500         .          .
           1338     22SEP82       19.6     9.1       36500         .          .
           1339     30SEP82        9.1     9.1       27500         .          .

--------------- REPORT YEAR=1982    TYPE=DAMS    STATION=YSWPOND-6 ---------------

           OBS        DATE        TEMP      PH        COND        FLOW       TSS

           1340     19MAR82       10.0     9.7       32000         .          .
           1341     25MAR82       10.0     9.7       32000         .          .
           1342     08APR82       17.1     8.9       26000         .          .
           1343     16APR82       16.0     9.1       26000         .          .
           1344     30APR82       18.8     8.6       26000         .          .
           1345     06MAY82       19.0     8.5       26000         .          .
           1346     14MAY82       22.0     9.1       30000         .          .
           1347     21MAY82       22.8     9.3       39300         .          .
           1348     25MAY82       23.0     9.4       38000         .          .
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                      RIO BLANCO OIL SHALE COMPANY
               ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                 DEVELOPMENT ACTIVITIES MONITORING DATA

--------------- REPORT YEAR=1982    TYPE=DAMS    STATION=YSWPOND-6 ---------------

            OBS       DATE       TEMP      PH       COND       FLOW      TSS

            1349     09JUN82     24.0      9.5      38000        .         .
            1350     16JUN82     20.0      9.5      36000        .         .
            1351     23JUN82     22.0      9.7      36000        .         .
            1352     30JUN82     25.0      9.0      52000        .         .
            1353     07JUL82     24.5      9.0      68000        .         .
            1354     14JUL82     22.7      9.3      77000        .         .
            1355     21JUL82     27.1      8.9      82000        .         .
            1356     28JUL82     28.0      9.0      85000        .         .
            1357     04AUG82     28.3      9.0      85000        .         .
            1358     18AUG82     23.5      8.5      82000        .         .
            1359     25AUG82     19.0      8.7      80000        .         .
            1360     01SEP82     18.0      8.8      78000        .         .
            1361     08SEP82     19.0      8.8      79000        .         .
            1362     15SEP82     20.6      9.0      47500        .         .
            1363     22SEP82     24.5      8.9      69000        .         .
            1364     30SEP82     10.6      9.0      47000        .         .

--------------- REPORT YEAR=1982    TYPE=DAMS    STATION=YSWPOND-7 ---------------

            OBS       DATE       TEMP      PH       COND      FLOW      TSS

            1365     19MAR82      6.5      8.1      6400        .         .
            1366     25MAR82      6.6      8.2      6500        .         .
            1367     08APR82     18.1      8.0      4300        .         .
            1368     16APR82     16.2      8.1      4600        .         .
            1369     30APR82     19.7      8.1      4200        .         .
            1370     06MAY82     20.0      8.1      4300        .         .
            1371     14MAY82     25.0      8.8      4800        .         .
            1372     21MAY82     25.1      8.8      4900        .         .
            1373     25MAY82     23.0      8.9      5000        .         .
            1374     09JUN82     18.0      8.0      5000        .         .
            1375     16JUN82     19.0      8.1      5200        .         .
            1376     23JUN82     20.0      8.1      5000        .         .
            1377     30JUN82     22.0      8.0      7000        .         .
            1378     07JUL82     22.3      7.9      7200        .         .
            1379     14JUL82     20.5      8.8      5300        .         .
            1380     21JUL82     25.7      8.4      5400        .         .
            1381     28JUL82     26.0      8.3      5500        .         .
            1382     04AUG82     26.5      8.4      5600        .         .
            1383     18AUG82     22.5      7.9      4400        .         .
            1384     25AUG82     19.0      7.8      4100        .         .
            1385     01SEP82     18.5      7.7      4300        .         .
            1386     08SEP82     19.0      7.7      4500        .         .
            1387     15SEP82     11.8      7.9      4250        .         .
            1388     22SEP82     15.4      7.8      4200        .         .
            1389     30SEP82     11.6      7.9      4200        .         .
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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                      DEVELOPMENT ACTIVITIES MONITORING DATA

--------------- REPORT YEAR=1982    TYPE=DAMS    STATION=YSWPOND-8 ---------------

                OBS       DATE       TEMP      PH      COND     FLOW     TSS

                1390    25MAY82      17.0     8.0      3100       .       .
                1391    09JUN82      17.3     8.0      3500       .       .
                1392    16JUN82      18.0     8.0      3400       .       .
                1393    23JUN82      19.0     8.1      3400       .       .
                1394    30JUN82      22.0     8.1      4000       .       .
                1395    07JUL82      23.0     8.2      4000       .       .
                1396    14JUL82      23.8     8.3      3500       .       .
                1397    21JUL82      23.5     7.8      3650       .       .
                1398    28JUL82      28.0     7.9      3700       .       .
                1399    04AUG82      28.0     7.9      3700       .       .
                1400    18AUG82      27.0     7.6      3800       .       .
                1401    25AUG82      19.0     7.8      3700       .       .
                1402    01SEP82      21.5     7.7      4000       .       .
                1403    08SEP82      22.0     7.8      4000       .       .
                1404    15SEP82      13.5     7.7      3500       .       .
                1405    22SEP82      18.7     7.6      3700       .       .
                1406    30SEP82       7.8     7.7      3400       .       .

--------------- REPORT YEAR=1982    TYPE=DAMS    STATION=YSWPOND-9 ---------------

                OBS       DATE       TEMP      PH      COND     FLOW     TSS

                1407    02MAR82       2.0      .         .        .       .
                1408    19MAR82       7.5     8.0      3600       .       .
                1409    25MAR82       7.5     8.1      3600       .       .
                1410    08APR82      11.0     8.1      3500       .       .
                1411    16APR82      10.8     8.0      3600       .       .
                1412    30APR82      11.7     8.0      3000       .       .
                1413    06MAY82      12.0     8.0      3100       .       .
                1414    14MAY82      16.0     8.1      3000       .       .
                1415    21MAY82      16.1     8.1      3000       .       .
                1416    25MAY82      16.5     8.2      3000       .       .
                1417    09JUN82      19.0     7.9      3400       .       .
                1418    16JUN82      20.0     8.0      3400       .       .
                1419    23JUN82      21.0     7.9      3300       .       .
                1420    30JUN82      26.0     7.9      3400       .       .
                1421    07JUL82      27.0     7.8      3400       .       .
                1422    14JUL82      23.3     8.2      3600       .       .
                1423    21JUL82      28.9     7.8      3700       .       .
                1424    28JUL82      29.0     7.8      3800       .       .
                1425    04AUG82      28.0     7.8      3800       .       .
                1426    18AUG82      27.5     7.8      3050       .       .
                1427    25AUG82      22.5     7.9      2850       .       .
                1428    01SEP82      25.6     7.9      2900       .       .
                1429    08SEP82      25.0     7.9      2900       .       .
                1430    15SEP82      14.7     8.0      2600       .       .
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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                    DEVELOPMENT ACTIVITIES MONITORING DATA

--------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YSWPOND-9 ---------------

           OBS       DATE       TEMP     PH      COND     FLOW     TSS

           1431     22SEP82     17.9     7.8     2600      .        .
           1432     30SEP82     11.5     7.8     2500      .        .

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YWRPOND ----------------

           OBS       DATE       TEMP     PH      COND     FLOW     TSS

           1433     01JAN82      8.6     8.3     1450      .        .
           1434     02JAN82      9.0     8.3     1450      .        .
           1435     03JAN82      8.0     8.3     1400      .        .
           1436     04JAN82      8.0     8.3     1450      .        .
           1437     05JAN82     12.2     8.0     1375      .        .
           1438     06JAN82      8.0     8.2     1450      .        .
           1439     07JAN82      8.1     8.2     1450      .        .
           1440     08JAN82      7.0     8.3     1425      .        .
           1441     09JAN82      6.8     8.2     1450      .        .
           1442     10JAN82      6.0     8.2     1450      .        .
           1443     11JAN82      7.2     8.2     1450      .        .
           1444     12JAN82      6.8     8.2     1400      .        .
           1445     13JAN82      8.5     8.2     1425      .        .
           1446     14JAN82      6.9     8.2     1425      .        .
           1447     15JAN82      6.9     8.2     1425      .        .
           1448     16JAN82      8.0     8.2     1450      .        .
           1449     17JAN82      8.0     8.1     1425      .        .
           1450     18JAN82      6.6     8.2     1425      .        .
           1451     19JAN82      7.6     8.3     1425      .        .
           1452     20JAN82      8.0     8.3     1425      .        .
           1453     21JAN82      7.6     8.2     1425      .        .
           1454     22JAN82      7.7     8.2     1425      .        .
           1455     23JAN82      7.5     8.2     1425      .        .
           1456     24JAN82      7.5     8.3     1425      .        .
           1457     25JAN82      9.0     8.2     1475      .        .
           1458     26JAN82      8.6     8.2     1450      .        .
           1459     27JAN82      9.0     8.1     1425      .        .
           1460     28JAN82      8.7     8.1     1500      .        .
           1461     29JAN82      8.8     8.1     1500      .        .
           1462     30JAN82      8.2     8.3     1450      .        .
           1463     31JAN82      8.8     8.3     1425      .        .
           1464     01FEB82      7.0     8.3     1450      .        .
           1465     02FEB82      6.4     8.1     1450      .        .
           1466     03FEB82      8.0     8.3     1425      .        .
           1467     04FEB82      7.6     8.2     1475      .        .
           1468     05FEB82      7.0     8.2     1450      .        .
           1469     06FEB82      8.4     8.2     1450      .        .
           1470     07FEB82      8.9     8.1     1450      .        .
           1471     08FEB82      8.3     8.3     1450      .        .
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RIO BLANCO OIL SHALE COMPANY
ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982 TYPE=DAMS STATION=YWRPOND ----------------

OBS	DATE	TEMP	PH	COND	FLOW	TSS
1472	09FEB82	7.2	8.2	1425	.	.
1473	10FEB82	7.1	8.2	1425	.	.
1474	11FEB82	8.6	8.2	1400	.	.
1475	12FEB82	8.3	8.3	1450	.	.
1476	13FEB82	8.6	8.2	1450	.	.
1477	14FEB82	8.6	8.2	1425	.	.
1478	15FEB82	11.0	8.2	1450	.	.
1479	16FEB82	11.2	8.1	1450	.	.
1480	17FEB82	11.5	8.1	1450	.	.
1481	18FEB82	11.0	8.2	1375	.	.
1482	19FEB82	11.3	8.1	1400	.	.
1483	20FEB82	10.8	8.3	1425	.	.
1484	21FEB82	11.3	8.3	1450	.	.
1485	22FEB82	8.6	8.3	1425	.	.
1486	23FEB82	12.5	8.2	1450	.	.
1487	24FEB82	12.0	8.2	1450	.	.
1488	25FEB82	12.0	8.2	1450	.	.
1489	26FEB82	12.0	8.2	1425	.	.
1490	27FEB82	11.8	8.1	1400	.	.
1491	28FEB82	12.1	8.2	1400	.	.
1492	01MAR82	12.2	8.2	1450	.	.
1493	02MAR82	12.0	8.2	1400	.	.
1494	03MAR82	12.0	8.2	1450	.	.
1495	04MAR82	12.2	8.3	1450	.	.
1496	05MAR82	12.0	8.2	1450	.	.
1497	06MAR82	11.8	8.2	1425	.	.
1498	07MAR82	11.9	8.3	1425	.	.
1499	08MAR82	11.0	8.2	1500	.	.
1500	09MAR82	11.0	8.1	1475	.	.
1501	10MAR82	11.5	8.2	1400	.	.
1502	11MAR82	11.3	8.2	1450	.	.
1503	12MAR82	11.5	8.1	1400	.	.
1504	13MAR82	12.0	8.2	1425	.	.
1505	14MAR82	12.9	8.2	1425	.	.
1506	15MAR82	12.0	8.1	1450	.	.
1507	16MAR82	12.8	8.0	1450	.	.
1508	17MAR82	11.6	8.0	1400	.	.
1509	18MAR82	12.2	8.0	1450	.	.
1510	19MAR82	12.2	8.1	1400	.	.
1511	20MAR82	12.2	8.0	1400	.	.
1512	21MAR82	12.2	8.2	1450	.	.
1513	22MAR82	10.8	8.3	1500	.	.
1514	23MAR82	10.6	8.2	1500	.	.
1515	24MAR82	10.1	8.3	1450	.	.
1516	25MAR82	10.2	8.2	1450	.	.
1517	26MAR82	10.1	8.4	1450	.	.
1518	27MAR82	11.2	8.2	1450	.	.

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                        RIO BLANCO OIL SHALE COMPANY
                 ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                   DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=DAMS   STATION=YWRPOND ----------------

              OBS       DATE        TEMP      PH       COND      FLOW      TSS

              1519     28MAR82      12.0      8.3      1425        .        .
              1520     29MAR82      11.0      8.2      1400        .        .
              1521     30MAR82      11.0      8.2      1400        .        .
              1522     31MAR82      11.6      8.2      1400        .        .
              1523     25MAY82      16.0      8.4      1450        .        .
              1524     30JUN82      18.0      8.3      1450        .        .
              1525     08JUL82      18.1      8.4      1450        .        .

--------------- REPORT YEAR=1982   TYPE=SEEP   STATION=SPG-MILL ----------------

              OBS       DATE        TEMP      PH       COND      FLOW      TSS

              1526     17FEB82      10.2      7.5      1700        5        .
              1527     28APR82      10.1      7.4      1850        3        2
              1528     21JUL82      15.0      7.6      1800        .        .
              1529     06OCT82       9.0      7.6      1900        0        .

----------------- REPORT YEAR=1982   TYPE=SEEP   STATION=SPG-1 -----------------

              OBS       DATE        TEMP      PH       COND      FLOW      TSS

              1530     19JAN82      6.5       7.2      950        18        .

---------------- REPORT YEAR=1982   TYPE=SEEP   STATION=SPG-14 -----------------

              OBS       DATE        TEMP      PH       COND      FLOW      TSS

              1531     26JAN82      3.0       7.7      2100        3        .
              1532     28APR82      6.9       7.9      2050        2        13

----------------- REPORT YEAR=1982   TYPE=SEEP   STATION=SPG-2 -----------------

              OBS       DATE        TEMP      PH       COND      FLOW      TSS

              1533     19JAN82        8       7.7      1050        7        .
              1534     21JUL82       24       8.3       840        5        .

---------------- REPORT YEAR=1982   TYPE=SEEP   STATION=SPG-20 -----------------

              OBS       DATE        TEMP      PH       COND      FLOW      TSS

              1535     12FEB82      6.0       7.5      1250        5        .
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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     DEVELOPMENT ACTIVITIES MONITORING DATA

---------------- REPORT YEAR=1982   TYPE=SEEP   STATION=SPG-20 ----------------

            OBS       DATE       TEMP     PH      COND     FLOW     TSS

            1536     06OCT82     9.5      8.4     1250      46       .

---------------- REPORT YEAR=1982   TYPE=SEEP   STATION=SPG-3 -----------------

            OBS       DATE       TEMP     PH      COND     FLOW     TSS

            1537     28APR82     13.0     7.1     1300       5       9
            1538     21JUL82     13.5     7.9     1250       .       .
            1539     06OCT82     11.0     8.1     1200      25       .

---------------- REPORT YEAR=1982   TYPE=SEEP   STATION=SPG-4 -----------------

            OBS       DATE       TEMP     PH      COND     FLOW     TSS

            1540     23JAN82      9.0     8.1     1100      60       .
            1541     28APR82     16.8     7.2     1250      31       7
            1542     21JUL82     15.5     7.9     1300      10       .
            1543     06OCT82     11.0     8.3     1100      36       .

---------------- REPORT YEAR=1982   TYPE=SEEP   STATION=SPG-5 -----------------

            OBS       DATE       TEMP     PH      COND     FLOW     TSS

            1544     26JAN82     3.3      8.1     1250      84       .
            1545     28APR82     6.5      8.5     1450      15       8
            1546     21JUL82     7.8      7.8     1400       .       .
            1547     06OCT82     6.5      8.3     1600       .       .

---------------- REPORT YEAR=1982   TYPE=SEEP   STATION=SPG-8 -----------------

            OBS       DATE       TEMP     PH      COND     FLOW     TSS

            1548     12FEB82     6.2      7.8     1100       0       .
            1549     28APR82     7.0      6.8     1100      36       5
            1550     21JUL82     8.0      7.6     1200      35       .
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                         RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     DEVELOPMENT ACTIVITIES MONITORING DATA

--------------- REPORT YEAR=1982    TYPE=DAMS    STATION=YLDGEDGE ---------------

                             OBS      DATE        EDGE

                               1    07JAN82        .
                               2    13JAN82       1.2
                               3    21JAN82       1.2
                               4    27JAN82       1.2
                               5    03FEB82       1.2
                               6    08FEB82       1.2
                               7    17FEB82       2.0
                               8    24FEB82       2.0
                               9    03MAR82       1.4
                              10    08MAR82       1.4
                              11    18MAR82       1.4
                              12    23MAR82       1.4
                              13    26MAY82       1.2
                              14    14JUN82       0.5
                              15    24AUG82       0.2
                              16    17SEP82       2.5
```

APPENDIX 5-1.3

1982 Field Measurements Data

- o Alluvial Aquifers
- o Lower Aquifer
- o Upper Aquifer

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                     RIO BLANCO OIL SHALE COMPANY
               ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                 FIELD WATER QUALITY DATA - TRACT C-A

---------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S22 ----------

          OBS      DATE        WL      TEMP     PH      SPC_COND

           1     29JAN82     56.5      6.5      7.8       2200
           2     13APR82     56.3      8.0      7.5       2000
           3     30JUL82     57.2      7.3      7.6       2300
           4     21OCT82     58.0      7.2      7.4       2500

---------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S23 ----------

          OBS      DATE        WL      TEMP     PH      SPC_COND

           5     27JAN82     37.7      6.9      7.6       1600
           6     13APR82     37.2      8.5      7.4       1450
           7     29JUL82     38.1      8.5      7.1       1550

---------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S24 ----------

          OBS      DATE        WL      TEMP     PH      SPC_COND

            8    27JAN82     10.1      7.7      7.9       1850
            9    19FEB82     10.1      7.6      7.5       1800
           10    30MAR82     10.2      7.9      7.6       1900
           11    20APR82     10.1      7.9      7.2       1700
           12    26MAY82     10.4       .        .           .
           13    14JUN82      9.6       .        .           .
           14    29JUL82      9.6      9.3      7.7       1900
           15    24AUG82      9.9       .        .           .
           16    17SEP82      9.9       .        .           .
           17    20OCT82      9.6      8.7      7.2       1700

---------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S27D ----------

          OBS      DATE        WL      TEMP     PH      SPC_COND

          18     05JAN82     25.9       .        .           .
          19     06JAN82     25.8       .        .           .
          20     07JAN82     25.8      7.6      7.5       1275
          21     08JAN82     25.7       .        .           .
          22     11JAN82     25.7      7.5      7.5       1300
          23     12JAN82     25.7       .        .           .
          24     13JAN82     25.7       .        .           .
          25     14JAN82     25.7       .        .           .
          26     15JAN82     25.8       .        .           .
          27     18JAN82     25.8       .        .           .
          28     19JAN82     25.3       .        .           .
          29     20JAN82     25.2       .        .           .
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                         RIO BLANCO OIL SHALE COMPANY
                 ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                    FIELD WATER QUALITY DATA - TRACT C-A

---------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S27D ----------

              OBS       DATE        WL       TEMP      PH      SPC_COND

              30      21JAN82      25.2       7.7      7.5       1300
              31      22JAN82      25.2        .        .           .
              32      25JAN82      25.2        .        .           .
              33      26JAN82      25.2        .        .           .
              34      27JAN82      25.3       8.2      7.7       1300
              35      28JAN82      25.3        .        .           .
              36      29JAN82      25.3        .        .           .
              37      31JAN82      25.3       7.9      7.5       1300
              38      01FEB82      25.3        .        .           .
              39      02FEB82      25.3        .        .           .
              40      03FEB82      25.2       6.8      7.5       1325
              41      04FEB82      25.3        .        .           .
              42      05FEB82      25.3        .        .           .
              43      08FEB82      25.2       7.1      7.6       1300
              44      09FEB82      25.2        .        .           .
              45      10FEB82      25.2        .        .           .
              46      11FEB82      25.1        .        .           .
              47      12FEB82      25.1        .        .           .
              48      15FEB82      25.0        .        .           .
              49      16FEB82      25.0        .        .           .
              50      17FEB82      25.1        .        .           .
              51      18FEB82      25.1       9.0      7.7       1225
              52      19FEB82      25.6        .        .           .
              53      22FEB82      25.6        .        .           .
              54      23FEB82      25.7        .        .           .
              55      24FEB82      25.6        .        .           .
              56      25FEB82      25.6       9.5      7.7       1350
              57      26FEB82      25.5        .        .           .
              58      01MAR82      25.8        .        .           .
              59      02MAR82      25.8        .        .           .
              60      03MAR82      25.8      10.0      7.6       1350
              61      04MAR82      25.8        .        .           .
              62      05MAR82      25.8        .        .           .
              63      08MAR82      25.8       9.0      7.6       1350
              64      09MAR82      25.8        .        .           .
              65      10MAR82      25.8        .        .           .
              66      11MAR82      25.8        .        .           .
              67      12MAR82      25.8        .        .           .
              68      15MAR82      25.7        .        .           .
              69      16MAR82      25.7        .        .           .
              70      17MAR82      25.7        .        .           .
              71      18MAR82      25.6      10.0      7.6       1350
              72      19MAR82      25.7        .        .           .
              73      22MAR82      25.8        .        .           .
              74      23MAR82      25.8       8.5      7.6       1400
              75      24MAR82      25.8        .        .           .
              76      25MAR82      25.8        .        .           .
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                         RIO BLANCO OIL SHALE COMPANY
                 ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                    FIELD WATER QUALITY DATA - TRACT C-A

---------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S27D ----------

           OBS      DATE        WL      TEMP     PH     SPC_COND

            77    26MAR82      25.9       .       .         .
            78    29MAR82      25.7       .       .         .
            79    30MAR82      25.7       .       .         .
            80    31MAR82      25.7       .       .         .
            81    08APR82      25.7       .       .         .
            82    15APR82      25.7       .       .         .
            83    19APR82      25.7       .       .         .
            84    30APR82      25.7       .       .         .
            85    06MAY82      25.6       .       .         .
            86    14MAY82      25.5       .       .         .
            87    21MAY82      25.7       .       .         .
            88    03JUN82      25.4       .       .         .
            89    16JUN82      25.5       .       .         .
            90    21JUN82      25.4       .       .         .
            91    30JUN82      25.4       .       .         .
            92    07JUL82      25.4       .       .         .
            93    14JUL82      25.5       .       .         .
            94    23JUL82      25.3       .       .         .
            95    29JUL82      25.5       .       .         .
            96    04AUG82      25.5       .       .         .
            97    10AUG82      25.5       .       .         .
            98    19AUG82      25.1       .       .         .
            99    25AUG82      25.1       .       .         .
           100    01SEP82      25.1       .       .         .
           101    09SEP82      25.1       .       .         .
           102    15SEP82      25.0       .       .         .
           103    22SEP82      24.9       .       .         .
           104    29SEP82      24.9       .       .         .

---------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S27S ----------

           OBS      DATE        WL      TEMP     PH     SPC_COND

           105    05JAN82      28.7       .       .            .
           106    06JAN82      28.7       .       .            .
           107    07JAN82      28.8      7.2     7.6        1500
           108    08JAN82      28.8       .       .            .
           109    11JAN82      28.9      7.3     7.6        1475
           110    12JAN82      29.0       .       .            .
           111    13JAN82      29.0       .       .            .
           112    14JAN82      29.0       .       .            .
           113    15JAN82      29.2       .       .            .
           114    18JAN82      29.1       .       .            .
           115    19JAN82      28.7       .       .            .
           116    20JAN82      28.7       .       .            .
           117    21JAN82      28.6      7.5     7.7        1500
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                         RIO BLANCO OIL SHALE COMPANY
                ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                    FIELD WATER QUALITY DATA - TRACT C-A

---------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S27S ----------

          OBS       DATE         WL       TEMP      PH      SPC_COND

          118      22JAN82      28.6        .        .          .
          119      25JAN82      28.7        .        .          .
          120      26JAN82      28.7        .        .          .
          121      27JAN82      28.9       7.8      7.8       1450
          122      28JAN82      28.9        .        .          .
          123      29JAN82      28.9        .        .          .
          124      31JAN82      28.9       8.3      7.7       1450
          125      01FEB82      28.9        .        .          .
          126      02FEB82      28.8        .        .          .
          127      03FEB82      29.1       7.1      7.7       1500
          128      04FEB82      28.9        .        .          .
          129      05FEB82      29.0        .        .          .
          130      08FEB82      29.1       6.9      7.5       1500
          131      09FEB82      29.0        .        .          .
          132      10FEB82      29.0        .        .          .
          133      11FEB82      28.8        .        .          .
          134      12FEB82      28.8        .        .          .
          135      15FEB82      28.9        .        .          .
          136      16FEB82      28.9        .        .          .
          137      17FEB82      28.8        .        .          .
          138      18FEB82      28.8       9.0      7.4       1500
          139      19FEB82      29.0        .        .          .
          140      22FEB82      29.0        .        .          .
          141      23FEB82      28.5        .        .          .
          142      24FEB82      28.0        .        .          .
          143      25FEB82      28.0       9.5      7.5       1600
          144      26FEB82      28.0        .        .          .
          145      01MAR82      27.5        .        .          .
          146      02MAR82      27.5        .        .          .
          147      03MAR82      27.6      10.0      7.5       1600
          148      04MAR82      27.6        .        .          .
          149      05MAR82      27.6        .        .          .
          150      08MAR82      28.3       9.0      7.5       1550
          151      09MAR82      28.3        .        .          .
          152      10MAR82      28.3        .        .          .
          153      11MAR82      28.3        .        .          .
          154      12MAR82      28.3        .        .          .
          155      15MAR82      27.6        .        .          .
          156      16MAR82      27.5        .        .          .
          157      17MAR82      27.7        .        .          .
          158      18MAR82      27.7      10.0      7.5       1600
          159      19MAR82      27.7        .        .          .
          160      22MAR82      27.1        .        .          .
          161      23MAR82      27.1       8.2      7.9       1500
          162      24MAR82      27.1        .        .          .
          163      25MAR82      27.1        .        .          .
          164      26MAR82      27.1        .        .          .
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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                    FIELD WATER QUALITY DATA - TRACT C-A

---------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S27S ----------

               OBS      DATE       WL      TEMP     PH      SPC_COND

               165    29MAR82     26.9       .       .           .
               166    30MAR82     26.8       .       .           .
               167    31MAR82     26.8      8.9     7.7        1500
               168    08APR82     26.3       .       .           .
               169    15APR82     26.3       .       .           .
               170    19APR82     26.2       .       .           .
               171    30APR82     26.1       .       .           .
               172    06MAY82     25.8       .       .           .
               173    14MAY82     25.7       .       .           .
               174    21MAY82     25.7       .       .           .
               175    25MAY82     25.8       .       .           .
               176    03JUN82     25.6       .       .           .
               177    10JUN82     25.8       .       .           .
               178    16JUN82     25.9       .       .           .
               179    21JUN82     25.9       .       .           .
               180    01JUL82     25.9       .       .           .
               181    08JUL82     26.0       .       .           .
               182    14JUL82     26.0       .       .           .
               183    23JUL82     26.0       .       .           .
               184    29JUL82     26.1     10.5     7.6        1600
               185    03AUG82     26.1       .       .           .
               186    10AUG82     26.1       .       .           .
               187    19AUG82     26.4       .       .           .
               188    25AUG82     26.5       .       .           .
               189    01SEP82     26.7       .       .           .
               190    09SEP82     26.6       .       .           .
               191    15SEP82     26.6       .       .           .
               192    22SEP82     26.5       .       .           .
               193    29SEP82     26.4       .       .           .
               194    07OCT82     26.2       .       .           .
               195    13OCT82     26.2       .       .           .
               196    20OCT82     26.1      9.6     7.3        1500
               197    29OCT82     26.5       .       .           .
               198    04NOV82     26.8       .       .           .
               199    10NOV82     27.2       .       .           .
               200    17NOV82     27.1       .       .           .
               201    24NOV82     27.0       .       .           .
               202    06DEC82     26.8       .       .           .
               203    14DEC82     26.7       .       .           .
               204    22DEC82     26.6       .       .           .
               205    29DEC82     26.5       .       .           .
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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     FIELD WATER QUALITY DATA - TRACT C-A

--------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S28AD ---------

            OBS      DATE        WL      TEMP      PH      SPC_COND

            206    31JAN82     12.2     7.3       7.8       2850
            207    14APR82     11.8     6.9       7.6       2300
            208    30JUL82     13.7     7.5       7.0       2600
            209    21OCT82     14.1     7.2       7.4       2700

--------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S28AS ---------

            OBS      DATE        WL      TEMP      PH      SPC_COND

            210    31JAN82      9.6     7.5       7.7       3000
            211    14APR82     10.0     6.8       7.4       2350
            212    30JUL82     11.5     8.0       7.1       2500
            213    21OCT82     13.1      .         .           .

---------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S28D ---------

            OBS      DATE        WL      TEMP      PH      SPC_COND

            214    29JAN82     13.6     7.6       7.7       2125
            215    14APR82     13.8     7.8       7.4       2000
            216    30JUL82     15.3     7.2       7.2       2100
            217    21OCT82     17.6     7.8       7.7       2300

---------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S28S ---------

            OBS      DATE        WL      TEMP      PH      SPC_COND

            218    29JAN82     13.3     8.3       7.4       2200
            219    14APR82     13.4     8.0       7.2       2200
            220    30JUL82     15.3     7.3       7.2       3100

--------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S29AD ---------

            OBS      DATE        WL      TEMP      PH      SPC_COND

            221    29JAN82     27.7     7.2       7.8       2200
            222    13APR82     25.3     8.5       7.3       2000
            223    29JUL82     26.0     8.5       7.6       2200
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                    RIO BLANCO OIL SHALE COMPANY
               ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                  FIELD WATER QUALITY DATA - TRACT C-A

--------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S29AS ----------

              OBS      DATE        WL       TEMP      PH      SPC_COND

              224    29JAN82      29.5        .        .          .
              225    13APR82      26.0      8.9      7.4       2100
              226    29JUL82      26.7      8.7      7.3       3400

---------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S29D ----------

              OBS      DATE        WL       TEMP      PH      SPC_COND

              227    29JAN82      26.3      6.5      7.8       4400
              228    13APR82      23.4      8.5      7.4       4900
              229    29JUL82      24.4      8.5      7.6       4800
              230    12OCT82      25.2        .        .          .

---------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S29S ----------

              OBS      DATE        WL       TEMP      PH      SPC_COND

              231    29JAN82      27.4        .        .          .
              232    13APR82      24.2        8      7.5       4000
              233    29JUL82      24.7        8      7.4       4300
              234    12OCT82      25.0        .        .          .

---------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S30 -----------

              OBS      DATE        WL       TEMP      PH      SPC_COND

              235    29JAN82      25.0       7.5     7.9       2300
              236    13APR82      23.3       8.7     7.9       1900
              237    29JUL82      23.9      11.2     7.9       2300

----------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S7 -----------

              OBS      DATE        WL       TEMP      PH      SPC_COND

              238    07JAN82      24.3      6.3      7.4       1225
              239    12JAN82      24.5      7.5      7.5       1225
              240    21JAN82      24.5      7.6      7.7       1250
              241    26JAN82      24.6      7.6      7.5       1200
              242    27JAN82      24.9      7.6      7.6       1250
              243    03FEB82      25.5      7.0      7.7       1275
              244    08FEB82      25.7      6.8      7.7       1250
              245    18FEB82      25.2      7.5      7.5       1250
              246    25FEB82      24.5      9.0      7.4       1300
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                    RIO BLANCO OIL SHALE COMPANY
             ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
               FIELD WATER QUALITY DATA - TRACT C-A

----------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S7 -----------

          OBS      DATE         WL      TEMP      PH      SPC_COND

          247     03MAR82      23.7     9.2       7.5       1300
          248     08MAR82      24.0     9.0       7.6       1250
          249     18MAR82      24.1     9.1       7.6       1250
          250     23MAR82      22.9     7.5       7.6       1150
          251     19APR82      21.3     6.5       7.5       1150
          252     26MAY82      21.0      .         .           .
          253     14JUN82      21.0      .         .           .
          254     29JUL82      24.9     9.8       7.6       1250
          255     24AUG82      25.7      .         .           .
          256     17SEP82      26.4      .         .           .
          257     07OCT82      27.0      .         .           .
          258     13OCT82      26.8     9.0       7.5       1100
          259     20OCT82      26.9      .         .           .
          260     29OCT82      27.0      .         .           .
          261     04NOV82      27.0      .         .           .
          262     10NOV82      26.9      .         .           .
          263     17NOV82      26.7      .         .           .
          264     24NOV82      26.9      .         .           .
          265     06DEC82      27.1      .         .           .
          266     14DEC82      27.0      .         .           .
          267     22DEC82      26.9      .         .           .
          268     29DEC82      26.7      .         .           .


----------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S8 -----------

          OBS      DATE         WL      TEMP      PH      SPC_COND

          269     07JAN82      43.1      .         .           .
          270     12JAN82      43.3      .         .           .
          271     21JAN82      43.3      .         .           .
          272     26JAN82      43.3      .         .           .
          273     27JAN82      43.4      .         .           .
          274     03FEB82      43.4      .         .           .
          275     08FEB82      43.6      .         .           .
          276     18FEB82      43.5     7.9       7.6       1050
          277     25FEB82      43.3     8.5       7.6       1050
          278     03MAR82      43.3     8.4       7.6       1000
          279     08MAR82      42.6     8.6       7.6       1000
          280     18MAR82      43.1     8.5       7.6       1000
          281     23MAR82      43.3     8.0       7.5       1050
          282     19APR82      42.5     8.2       7.2        950
          283     26MAY82      34.0      .         .           .
          284     14JUN82      32.4      .         .           .
          285     29JUL82      36.9     8.9       7.7       1100
          286     24AUG82      38.7      .         .           .
          287     17SEP82      40.1      .         .           .
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                      RIO BLANCO OIL SHALE COMPANY
               ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                  FIELD WATER QUALITY DATA - TRACT C-A

----------- REPORT YEAR=1982   TYPE=ALLUVIAL AQUIFER   STATION=GS-S8 -----------

            OBS      DATE        WL      TEMP     PH      SPC_COND

            288     07OCT82     40.9       .       .          .
            289     13OCT82     41.0     8.5     7.1        900
            290     20OCT82     41.3       .       .          .
            291     28OCT82     41.5       .       .          .
            292     04NOV82     41.7       .       .          .
            293     10NOV82     41.8       .       .          .
            294     17NOV82     41.9       .       .          .
            295     24NOV82     42.1       .       .          .
            296     06DEC82     42.3       .       .          .
            297     14DEC82     42.4       .       .          .
            298     22DEC82     42.5       .       .          .
            299     29DEC82     42.3       .       .          .

----------- REPORT YEAR=1982   TYPE=LOWER AQUIFER   STATION=CE-709L -----------

            OBS      DATE        WL      TEMP     PH      SPC_COND

            300     26JUL82    162.6       .       .         .

------------ REPORT YEAR=1982   TYPE=LOWER AQUIFER   STATION=GS-M4L ------------

            OBS      DATE        WL      TEMP     PH      SPC_COND

            301     31JAN82    565.5       .       .         .
            302     30APR82    562.0       .       .         .
            303     26JUL82    557.3       .       .         .

------------ REPORT YEAR=1982   TYPE=LOWER AQUIFER   STATION=GS-15L ------------

            OBS      DATE        WL      TEMP     PH      SPC_COND

            304     11JAN82    370.1       .       .           .
            305     18FEB82    370.1       .       .           .
            306     26MAR82    368.1       .       .           .
            307     30APR82    368.1       .       .           .
            308     06MAY82    369.2       .       .           .
            309     11MAY82    369.0       .       .           .
            310     24MAY82    369.1       .       .           .
            311     08JUN82    369.2       .       .           .
            312     15JUN82    369.2       .       .           .
            313     22JUN82    369.2       .       .           .
            314     07JUL82    369.1       .       .           .
            315     16JUL82    369.1       .       .           .
            316     19JUL82    369.0    15.8     8.9        1600
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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                      FIELD WATER QUALITY DATA - TRACT C-A

------------ REPORT YEAR=1982   TYPE=LOWER AQUIFER   STATION=GS-15L -----------

              OBS      DATE        WL       TEMP     PH     SPC_COND

              317     22JUL82     369.1       .       .          .
              318     26JUL82     369.1       .       .          .
              319     05AUG82     369.1       .       .          .
              320     11AUG82     369.1       .       .          .
              321     20AUG82     369.2       .       .          .
              322     26AUG82     369.0       .       .          .
              323     31AUG82     369.2       .       .          .
              324     07SEP82     369.1       .       .          .
              325     15SEP82     368.8       .       .          .
              326     23SEP82     369.1       .       .          .
              327     30SEP82     368.8       .       .          .
              328     26OCT82     369.0     14.5      8        4000

------------ REPORT YEAR=1982   TYPE=LOWER AQUIFER   STATION=GS-17L -----------

              OBS      DATE        WL       TEMP     PH     SPC_COND

              329     31JAN82     372.2       .       .         .
              330     18FEB82     372.2       .       .         .
              331     26MAR82     372.2       .       .         .
              332     30APR82     371.5       .       .         .
              333     26JUL82     371.7       .       .         .

------------ REPORT YEAR=1982   TYPE=LOWER AQUIFER   STATION=GS-19L -----------

              OBS      DATE        WL       TEMP     PH     SPC_COND

              334     31JAN82     137.8       .       .         .
              335     30APR82     136.6       .       .         .
              336     26JUL82     136.7       .       .         .

----------- REPORT YEAR=1982   TYPE=LOWER AQUIFER   STATION=GS-4-5L -----------

              OBS      DATE        WL       TEMP     PH     SPC_COND

              337     31JAN82     105.4       .       .         .
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                    RIO BLANCO OIL SHALE COMPANY
             ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
               FIELD WATER QUALITY DATA - TRACT C-A

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=AM-2AU ------------

         OBS      DATE        WL       TEMP      PH      SPC_COND

         338    11JAN82     377.2       .         .          .
         339    18FEB82     378.2       .         .          .
         340    26MAR82     378.3       .         .          .
         341    26AUG82     380.1       .         .          .
         342    31AUG82     380.2       .         .          .
         343    07SEP82     380.2       .         .          .
         344    15SEP82     380.1       .         .          .
         345    23SEP82     380.1       .         .          .
         346    30SEP82     379.8       .         .          .

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=AM-3U -------------

         OBS      DATE        WL       TEMP      PH      SPC_COND

         347    11JAN82      33.1       .         .          .
         348    18FEB82      34.6       .         .          .
         349    26MAR82      34.6       .         .          .
         350    19APR82      34.9       .         .          .
         351    06MAY82      34.6       .         .          .
         352    11MAY82      34.2       .         .          .
         353    24MAY82      33.7       .         .          .
         354    08JUN82      33.0       .         .          .
         355    15JUN82      33.0       .         .          .
         356    22JUN82      33.0       .         .          .
         357    07JUL82      32.8       .         .          .
         358    13JUL82      32.7     11.5       7.7       1000
         359    16JUL82      32.7       .         .          .
         360    22JUL82      32.7       .         .          .
         361    26JUL82      32.9       .         .          .
         362    05AUG82      32.0       .         .          .
         363    11AUG82      32.1       .         .          .
         364    20AUG82      33.1       .         .          .
         365    26AUG82      33.2       .         .          .
         366    31AUG82      33.3       .         .          .
         367    07SEP82      33.3       .         .          .
         368    15SEP82      33.4       .         .          .
         369    23SEP82      33.5       .         .          .
         370    29SEP82      33.4       .         .          .
         371    28OCT82      33.9      9.2       8.0        950

----------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=CE-701U ------------

         OBS      DATE        WL       TEMP      PH      SPC_COND

         372    27JAN82      97.3     12.4       7.6       1550
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                         RIO BLANCO OIL SHALE COMPANY
                 ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     FIELD WATER QUALITY DATA - TRACT C-A

----------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=CE-702L -----------

             OBS       DATE        WL       TEMP      PH     SPC_COND

             373     31JAN82      42.5        .        .         .
             374     30APR82      38.5        .        .         .
             375     26JUL82      39.0        .        .         .

----------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=CE-702U -----------

            OBS       DATE        WL       TEMP      PH      SPC_COND

            376     05JAN82      55.7        .        .          .
            377     06JAN82      55.8        .        .          .
            378     07JAN82      55.8        .        .          .
            379     08JAN82      55.4        .        .          .
            380     11JAN82      55.4        .        .          .
            381     12JAN82      55.4        .        .          .
            382     13JAN82      55.6        .        .          .
            383     14JAN82      55.6        .        .          .
            384     15JAN82      55.6        .        .          .
            385     18JAN82      55.4        .        .          .
            386     19JAN82      52.4        .        .          .
            387     20JAN82      52.0        .        .          .
            388     21JAN82      51.9        .        .          .
            389     22JAN82      51.7        .        .          .
            390     25JAN82      51.8        .        .          .
            391     26JAN82      51.8        .        .          .
            392     27JAN82      51.2        .        .          .
            393     28JAN82      51.3      12.4      8.1       1500
            394     29JAN82      51.3        .        .          .
            395     01FEB82      51.2        .        .          .
            396     02FEB82      51.1        .        .          .
            397     03FEB82      51.2        .        .          .
            398     04FEB82      51.2        .        .          .
            399     05FEB82      51.2        .        .          .
            400     08FEB82      51.0        .        .          .
            401     09FEB82      50.8        .        .          .
            402     10FEB82      50.7        .        .          .
            403     11FEB82      50.4        .        .          .
            404     12FEB82      50.4        .        .          .
            405     15FEB82      50.5        .        .          .
            406     16FEB82      50.4        .        .          .
            407     17FEB82      50.2        .        .          .
            408     18FEB82      50.3        .        .          .
            409     19FEB82      50.3        .        .          .
            410     22FEB82      50.1        .        .          .
            411     23FEB82      49.8        .        .          .
            412     24FEB82      49.9        .        .          .
            413     25FEB82      49.7        .        .          .
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                         RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     FIELD WATER QUALITY DATA - TRACT C-A

----------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=CE-702U -----------

             OBS      DATE        WL       TEMP      PH       SPC_COND

             414    26FEB82      49.8        .        .            .
             415    01MAR82      49.5        .        .            .
             416    02MAR82      49.4        .        .            .
             417    03MAR82      49.4        .        .            .
             418    04MAR82      49.5        .        .            .
             419    05MAR82      49.5        .        .            .
             420    08MAR82      49.5        .        .            .
             421    09MAR82      49.5        .        .            .
             422    10MAR82      45.9        .        .            .
             423    11MAR82      45.7        .        .            .
             424    12MAR82      45.4        .        .            .
             425    15MAR82      45.4        .        .            .
             426    16MAR82      45.5        .        .            .
             427    17MAR82      45.5        .        .            .
             428    18MAR82      45.4        .        .            .
             429    19MAR82      45.4        .        .            .
             430    22MAR82      53.9        .        .            .
             431    23MAR82      53.8        .        .            .
             432    24MAR82      53.8        .        .            .
             433    25MAR82      53.8        .        .            .
             434    26MAR82      53.8      12.6      8.0         1500
             435    29MAR82      51.0        .        .            .
             436    30MAR82      51.0        .        .            .
             437    31MAR82      48.7        .        .            .
             438    08APR82      47.8        .        .            .
             439    15APR82      47.8        .        .            .
             440    21APR82      47.7      13.0      8.1         1275
             441    30APR82      46.2        .        .            .
             442    06MAY82      49.6        .        .            .
             443    14MAY82      45.4        .        .            .
             444    21MAY82      46.3        .        .            .
             445    25MAY82      46.3        .        .            .
             446    03JUN82      45.6        .        .            .
             447    10JUN82      45.5        .        .            .
             448    16JUN82      45.3        .        .            .
             449    21JUN82      45.0        .        .            .
             450    01JUL82      44.7        .        .            .
             451    08JUL82      44.7        .        .            .
             452    14JUL82      44.6        .        .            .
             453    20JUL82      44.6      13.5      7.6         1300
             454    27JUL82      45.9        .        .            .
             455    05AUG82      45.9        .        .            .
             456    10AUG82      45.8        .        .            .
             457    19AUG82      48.0        .        .            .
             458    25AUG82      47.9        .        .            .
             459    01SEP82      44.6        .        .            .
             460    09SEP82      50.7        .        .            .
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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     FIELD WATER QUALITY DATA - TRACT C-A

----------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=CE-702U -----------

               OBS       DATE         WL      TEMP      PH      SPC_COND

               461     15SEP82       57.8       .        .          .
               462     22SEP82       47.6       .        .          .
               463     29SEP82       47.0       .        .          .
               464     07OCT82       45.7       .        .          .
               465     13OCT82       45.9       .        .          .
               466     20OCT82       57.0       .        .          .
               467     28OCT82       58.3     12.1      8.2       1300
               468     04NOV82       59.0       .        .          .
               469     10NOV82       48.5       .        .          .
               470     17NOV82       45.8       .        .          .
               471     24NOV82       47.2       .        .          .
               472     06DEC82       45.7       .        .          .
               473     14DEC82       44.8       .        .          .
               474     22DEC82       44.3       .        .          .
               475     29DEC82       44.6       .        .          .

----------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=CE-705AU -----------

               OBS       DATE         WL      TEMP      PH      SPC_COND

               476     07JAN82      260.3       .        .          .
               477     12JAN82      259.6       .        .          .
               478     21JAN82      259.1       .        .          .
               479     27JAN82      258.8       .        .          .
               480     28JAN82      257.2     11.4      8.0       1425
               481     03FEB82      258.6       .        .          .
               482     08FEB82      258.3       .        .          .
               483     17FEB82      256.5       .        .          .
               484     25FEB82      257.8       .        .          .
               485     03MAR82      257.4       .        .          .
               486     08MAR82      257.5       .        .          .
               487     18MAR82      257.1       .        .          .
               488     23MAR82      257.2       .        .          .
               489     26MAR82      257.5     11.6      8.0       1400
               490     08APR82      256.6       .        .          .
               491     15APR82      256.6       .        .          .
               492     21APR82      256.8     11.5      7.5       1250
               493     30APR82      256.6       .        .          .
               494     06MAY82      256.5       .        .          .
               495     14MAY82      256.4       .        .          .
               496     21MAY82      256.2       .        .          .
               497     25MAY82      256.2       .        .          .
               498     03JUN82      255.9       .        .          .
               499     10JUN82      255.8       .        .          .
               500     16JUN82      255.7       .        .          .
               501     21JUN82      254.2       .        .          .
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                         RIO BLANCO OIL SHALE COMPANY
                 ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                   FIELD WATER QUALITY DATA - TRACT C-A

----------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=CE-705AU -----------

        OBS      DATE        WL      TEMP      PH     SPC_COND

        502    01JUL82     254.2       .        .          .
        503    08JUL82     255.4       .        .          .
        504    13JUL82     255.4     12.0      7.6       1100
        505    23JUL82     255.1       .        .          .
        506    27JUL82     255.1       .        .          .
        507    05AUG82     255.0       .        .          .
        508    10AUG82     255.0       .        .          .
        509    19AUG82     254.6       .        .          .
        510    25AUG82     255.1       .        .          .
        511    01SEP82     255.2       .        .          .
        512    09SEP82     254.7       .        .          .
        513    15SEP82     254.7       .        .          .
        514    22SEP82     254.8       .        .          .
        515    29SEP82     254.4       .        .          .
        516    07OCT82     254.1       .        .          .
        517    13OCT82     254.2       .        .          .
        518    20OCT82     254.2       .        .          .
        519    28OCT82     254.2      9.6      7.9       1100
        520    04NOV82     253.9       .        .          .
        521    10NOV82     253.7       .        .          .
        522    17NOV82     253.7       .        .          .
        523    24NOV82     253.8       .        .          .
        524    06DEC82     253.5       .        .          .
        525    14DEC82     253.9       .        .          .
        526    22DEC82     253.5       .        .          .
        527    29DEC82     253.4       .        .          .

----------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=CE-707U -----------

        OBS      DATE        WL      TEMP      PH     SPC_COND

        528    27JAN82     238.5     10.8      7.8       1575
        529    06MAY82     239.4       .        .          .
        530    11MAY82     239.2       .        .          .
        531    24MAY82     239.2       .        .          .
        532    08JUN82     239.5       .        .          .
        533    15JUN82     239.6       .        .          .
        534    22JUN82     239.8       .        .          .
        535    07JUL82     239.8       .        .          .
        536    16JUL82     239.8       .        .          .
        537    22JUL82     239.7       .        .          .
        538    26JUL82     239.7       .        .          .
        539    05AUG82     239.8       .        .          .
        540    11AUG82     239.8       .        .          .
        541    20AUG82     239.8       .        .          .
        542    26AUG82     240.5       .        .          .
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                        RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     FIELD WATER QUALITY DATA - TRACT C-A

----------- REPORT YEAR=1982    TYPE=UPPER AQUIFER    STATION=CE-707U -----------

          OBS      DATE         WL        TEMP      PH      SPC_COND

          543     31AUG82     240.6        .         .         .
          544     07SEP82     240.6        .         .         .
          545     15SEP82     240.5        .         .         .
          546     23SEP82     240.4        .         .         .
          547     29SEP82     240.3        .         .         .


----------- REPORT YEAR=1982    TYPE=UPPER AQUIFER    STATION=CE-708U -----------

          OBS      DATE         WL       TEMP      PH       SPC_COND

          548     27JAN82     58.8        .         .           .
          549     18FEB82     58.7        .         .           .
          550     29MAR82     58.5        .         .           .
          551     19APR82     57.7        .         .           .
          552     13JUL82     50.3      11.8       8.4        1200


----------- REPORT YEAR=1982    TYPE=UPPER AQUIFER    STATION=CE-709U -----------

          OBS      DATE         WL        TEMP      PH       SPC_COND

          553     07JAN82     257.3        .         .           .
          554     12JAN82     258.6        .         .           .
          555     21JAN82     262.0        .         .           .
          556     27JAN82     257.9        .         .           .
          557     28JAN82     257.2      10.2       7.2        1750
          558     03FEB82     258.3        .         .           .
          559     08FEB82     258.9        .         .           .
          560     18FEB82     261.1        .         .           .
          561     25FEB82     258.8        .         .           .
          562     03MAR82     259.5        .         .           .
          563     08MAR82     259.6        .         .           .
          564     18MAR82     259.5        .         .           .
          565     23MAR82     259.6        .         .           .
          566     29MAR82     259.5      10.5       7.4        1800
          567     08APR82     258.6        .         .           .
          568     15APR82     258.6        .         .           .
          569     21APR82     258.6      10.6       7.1        1550
          570     30APR82     258.5        .         .           .
          571     06MAY82     258.9        .         .           .
          572     14MAY82     264.3        .         .           .
          573     21MAY82     263.9        .         .           .
          574     25MAY82     263.6        .         .           .
          575     03JUN82     264.0        .         .           .
          576     10JUN82     265.6        .         .           .
          577     16JUN82     265.3        .         .           .
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                        RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     FIELD WATER QUALITY DATA - TRACT C-A

----------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=CE-709U -----------

               OBS      DATE        WL      TEMP     PH     SPC_COND

               578    21JUN82     267.1       .       .         .
               579    01JUL82     267.1       .       .         .
               580    08JUL82     266.9       .       .         .
               581    14JUL82     266.9       .       .         .
               582    20JUL82     266.9     13.0     7.2      1400
               583    27JUL82     266.6       .       .         .
               584    05AUG82     266.5       .       .         .
               585    10AUG82     266.3       .       .         .
               586    19AUG82     266.8       .       .         .
               587    25AUG82     267.6       .       .         .
               588    01SEP82     266.7       .       .         .
               589    09SEP82     266.8       .       .         .
               590    15SEP82     267.3       .       .         .
               591    22SEP82     268.7       .       .         .
               592    29SEP82     267.3       .       .         .
               593    07OCT82     266.4       .       .         .
               594    13OCT82     264.9       .       .         .
               595    20OCT82     267.7       .       .         .
               596    26OCT82     269.5     10.6     6.8      1600
               597    04NOV82     266.0       .       .         .
               598    10NOV82     267.2       .       .         .
               599    17NOV82     265.3       .       .         .
               600    24NOV82     265.0       .       .         .
               601    06DEC82     263.3       .       .         .
               602    14DEC82     264.4       .       .         .
               603    22DEC82     267.9       .       .         .
               604    29DEC82     264.5       .       .         .


----------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-D1U -----------

               OBS      DATE        WL      TEMP     PH     SPC_COND

               605    07JAN82     579.0       .       .         .
               606    12JAN82     579.1       .       .         .
               607    21JAN82     578.7       .       .         .
               608    27JAN82     578.2       .       .         .
               609    28JAN82     578.1     14.6     8.6      1300
               610    03FEB82     578.3       .       .         .
               611    08FEB82     578.3       .       .         .
               612    17FEB82     578.1       .       .         .
               613    23FEB82     577.4       .       .         .
               614    03MAR82     577.0       .       .         .
               615    08MAR82     578.3       .       .         .
               616    18MAR82     576.6       .       .         .
               617    23MAR82     575.2       .       .         .
               618    29MAR82     575.2     15.0     8.4      1350
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                    RIO BLANCO OIL SHALE COMPANY
             ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                FIELD WATER QUALITY DATA - TRACT C-A

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-D1U ------------

        OBS      DATE         WL       TEMP      PH      SPC_COND

        619    08APR82      575.6        .        .          .
        620    15APR82      575.8        .        .          .
        621    22APR82      575.6      13.5      8.3       1200
        622    30APR82      576.4        .        .          .
        623    06MAY82      576.6        .        .          .
        624    14MAY82      577.7        .        .          .
        625    20MAY82      578.2        .        .          .
        626    25MAY82      578.4        .        .          .
        627    03JUN82      579.1        .        .          .
        628    10JUN82      579.7        .        .          .
        629    16JUN82      579.5        .        .          .
        630    21JUN82      579.4        .        .          .
        631    01JUL82      579.1        .        .          .
        632    08JUL82      579.3        .        .          .
        633    14JUL82      580.3        .        .          .
        634    21JUL82      581.3      16.0      8.2       1100
        635    27JUL82      581.3        .        .          .
        636    04AUG82      581.5        .        .          .
        637    10AUG82      582.0        .        .          .
        638    19AUG82      581.5        .        .          .
        639    25AUG82      581.1        .        .          .
        640    01SEP82      580.1        .        .          .
        641    09SEP82      578.3        .        .          .
        642    15SEP82      577.7        .        .          .
        643    22SEP82      587.7        .        .          .
        644    29SEP82      579.0        .        .          .
        645    07OCT82      579.6        .        .          .
        646    13OCT82      580.2        .        .          .
        647    20OCT82      580.1        .        .          .
        648    27OCT82      578.8      14.4      7.9       1400
        649    03NOV82      575.9        .        .          .
        650    08NOV82      566.6        .        .          .
        651    10NOV82      570.0        .        .          .
        652    17NOV82      577.3        .        .          .
        653    24NOV82      578.7        .        .          .
        654    06DEC82      578.9        .        .          .
        655    14DEC82      578.5        .        .          .
        656    22DEC82      577.3        .        .          .
        657    29DEC82      575.9        .        .          .
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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     FIELD WATER QUALITY DATA - TRACT C-A

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-D3U ------------

             OBS      DATE        WL        TEMP      PH     SPC_COND

             658     28JAN82       .        14.2      8.7       1400
             659     24FEB82     630.6        .        .          .
             660     03MAR82     630.4        .        .          .
             661     08MAR82     630.3        .        .          .
             662     18MAR82     630.1        .        .          .
             663     23MAR82     630.1        .        .          .
             664     29MAR82     630.2      14.6      8.5       1400
             665     08APR82     630.0        .        .          .
             666     06MAY82     630.4        .        .          .
             667     14MAY82     630.4        .        .          .
             668     20MAY82     630.5        .        .          .
             669     25MAY82     630.3        .        .          .
             670     03JUN82     630.4        .        .          .
             671     10JUN82     630.4        .        .          .
             672     16JUN82     630.4        .        .          .
             673     21JUN82     630.4        .        .          .
             674     01JUL82     630.4        .        .          .
             675     08JUL82     630.3        .        .          .
             676     14JUL82     630.3        .        .          .
             677     21JUL82     630.5      16.0      8.0       1200
             678     04AUG82     630.6        .        .          .
             679     10AUG82     630.6        .        .          .
             680     19AUG82     630.6        .        .          .
             681     25AUG82     630.6        .        .          .
             682     01SEP82     630.4        .        .          .
             683     09SEP82     629.6        .        .          .
             684     15SEP82     630.9        .        .          .
             685     22SEP82     631.2        .        .          .
             686     29SEP82     631.0        .        .          .
             687     07OCT82     629.3        .        .          .
             688     13OCT82     632.6        .        .          .
             689     20OCT82     629.0        .        .          .
             690     27OCT82     629.2      14.1      7.4       1400
             691     04NOV82     623.5        .        .          .
             692     17NOV82     626.6        .        .          .
             693     24NOV82     623.8        .        .          .
             694     06DEC82     625.6        .        .          .
             695     14DEC82     624.5        .        .          .
             696     22DEC82     623.2        .        .          .
             697     29DEC82     624.0        .        .          .
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                    RIO BLANCO OIL SHALE COMPANY
             ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
               FIELD WATER QUALITY DATA - TRACT C-A

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-D4U ------------

          OBS       DATE         WL       TEMP     PH      SPC_COND

          698     15APR82      630.1       .        .          .
          699     22APR82      629.8     14.5      8.2       1500
          700     30APR82      630.2       .        .          .

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-D5U ------------

           OBS       DATE        WL      TEMP     PH     SPC_COND

           701     08APR82      538       .        .        .
           702     15APR82      538       .        .        .
           703     21APR82      538       .        .        .
           704     22APR82      538       .        .        .
           705     30APR82      538       .        .        .
           706     06MAY82      538       .        .        .
           707     14MAY82      538       .        .        .
           708     20MAY82      538       .        .        .
           709     25MAY82      538       .        .        .
           710     03JUN82      538       .        .        .
           711     10JUN82      538       .        .        .
           712     16JUN82      538       .        .        .
           713     21JUN82      538       .        .        .
           714     01JUL82      538       .        .        .
           715     08JUL82      538       .        .        .
           716     14JUL82      538       .        .        .
           717     23JUL82      538       .        .        .
           718     27JUL82      538       .        .        .
           719     03AUG82      535       .        .        .
           720     10AUG82      538       .        .        .
           721     19AUG82      538       .        .        .
           722     25AUG82      538       .        .        .
           723     01SEP82      538       .        .        .
           724     09SEP82      538       .        .        .
           725     22SEP82      538       .        .        .
           726     29SEP82      538       .        .        .
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RIO BLANCO OIL SHALE COMPANY
ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
FIELD WATER QUALITY DATA - TRACT C-A

------------ REPORT YEAR=1982 TYPE=UPPER AQUIFER STATION=GS-D6U ------------

OBS	DATE	WL	TEMP	PH	SPC_COND
727	01JAN82	330	.	.	.
728	02JAN82	330	.	.	.
729	03JAN82	330	.	.	.
730	04JAN82	330	.	.	.
731	05JAN82	330	.	.	.
732	06JAN82	330	.	.	.
733	07JAN82	330	.	.	.
734	08JAN82	330	.	.	.
735	09JAN82	330	.	.	.
736	10JAN82	330	.	.	.
737	11JAN82	330	.	.	.
738	12JAN82	330	.	.	.
739	13JAN82	360	.	.	.
740	14JAN82	330	.	.	.
741	15JAN82	330	.	.	.
742	16JAN82	330	.	.	.
743	17JAN82	330	.	.	.
744	18JAN82	330	.	.	.
745	19JAN82	330	.	.	.
746	20JAN82	330	.	.	.
747	21JAN82	330	.	.	.
748	22JAN82	332	.	.	.
749	23JAN82	330	.	.	.
750	24JAN82	330	.	.	.
751	25JAN82	330	.	.	.
752	26JAN82	330	.	.	.
753	27JAN82	330	.	.	.
754	28JAN82	330	.	.	.
755	29JAN82	330	.	.	.
756	30JAN82	330	.	.	.
757	31JAN82	344	.	.	.
758	01FEB82	330	.	.	.
759	02FEB82	342	.	.	.
760	03FEB82	330	.	.	.
761	04FEB82	330	.	.	.
762	05FEB82	330	.	.	.
763	06FEB82	330	.	.	.
764	07FEB82	330	.	.	.
765	08FEB82	330	.	.	.
766	09FEB82	330	.	.	.
767	10FEB82	330	.	.	.
768	11FEB82	330	.	.	.
769	12FEB82	328	.	.	.
770	13FEB82	328	.	.	.
771	14FEB82	328	.	.	.
772	15FEB82	328	.	.	.
773	16FEB82	328	.	.	.

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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     FIELD WATER QUALITY DATA - TRACT C-A

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-D6U ------------

            OBS      DATE        WL      TEMP    PH     SPC_COND

            774    17FEB82     328.0      .       .        .
            775    18FEB82     335.0      .       .        .
            776    19FEB82     328.0      .       .        .
            777    20FEB82     328.0      .       .        .
            778    21FEB82     328.0      .       .        .
            779    22FEB82     328.0      .       .        .
            780    23FEB82     328.0      .       .        .
            781    24FEB82     328.0      .       .        .
            782    25FEB82     328.0      .       .        .
            783    26FEB82     328.0      .       .        .
            784    27FEB82     328.0      .       .        .
            785    28FEB82     328.0      .       .        .
            786    01MAR82     326.0      .       .        .
            787    02MAR82     328.0      .       .        .
            788    03MAR82     328.0      .       .        .
            789    04MAR82     328.0      .       .        .
            790    05MAR82     328.0      .       .        .
            791    06MAR82     328.0      .       .        .
            792    07MAR82     328.0      .       .        .
            793    08MAR82     328.0      .       .        .
            794    09MAR82     328.0      .       .        .
            795    10MAR82     328.0      .       .        .
            796    11MAR82     328.0      .       .        .
            797    12MAR82     330.0      .       .        .
            798    13MAR82     328.0      .       .        .
            799    14MAR82     328.0      .       .        .
            800    15MAR82     328.0      .       .        .
            801    16MAR82     330.0      .       .        .
            802    17MAR82     328.0      .       .        .
            803    18MAR82     328.0      .       .        .
            804    19MAR82     328.0      .       .        .
            805    20MAR82     328.0      .       .        .
            806    21MAR82     328.0      .       .        .
            807    22MAR82     325.0      .       .        .
            808    23MAR82     328.0      .       .        .
            809    24MAR82     328.0      .       .        .
            810    25MAR82     328.0      .       .        .
            811    26MAR82     328.0      .       .        .
            812    27MAR82     328.0      .       .        .
            813    28MAR82     328.0      .       .        .
            814    29MAR82     328.0      .       .        .
            815    30MAR82     328.0      .       .        .
            816    31MAR82     328.0      .       .        .
            817    12OCT82     328.0      .       .        .
            818    18NOV82     338.2      .       .        .
            819    14DEC82     339.1      .       .        .
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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                    FIELD WATER QUALITY DATA - TRACT C-A

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-D7U ------------

          OBS      DATE        WL       TEMP     PH     SPC_COND

          820     07JAN82     179.3       .       .         .
          821     12JAN82     179.7       .       .         .
          822     21JAN82     179.8       .       .         .
          823     27JAN82     179.8       .       .         .
          824     03FEB82     179.7       .       .         .
          825     08FEB82     179.7       .       .         .
          826     17FEB82     179.6       .       .         .
          827     25FEB82     179.8       .       .         .
          828     03MAR82     179.3       .       .         .
          829     08MAR82     179.5       .       .         .
          830     18MAR82     179.5       .       .         .
          831     23MAR82     179.4       .       .         .
          832     29MAR82     179.4       .       .         .

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-D8U ------------

           OBS      DATE       WL      TEMP     PH     SPC_COND

           833     01JAN82     218       .       .         .
           834     02JAN82     218       .       .         .
           835     03JAN82     218       .       .         .
           836     04JAN82     218       .       .         .
           837     05JAN82     218       .       .         .
           838     06JAN82     218       .       .         .
           839     07JAN82     216       .       .         .
           840     08JAN82     216       .       .         .
           841     09JAN82     216       .       .         .
           842     10JAN82     216       .       .         .
           843     11JAN82     216       .       .         .
           844     12JAN82     216       .       .         .
           845     13JAN82     214       .       .         .
           846     14JAN82     214       .       .         .
           847     15JAN82     214       .       .         .
           848     16JAN82     214       .       .         .
           849     17JAN82     214       .       .         .
           850     18JAN82     214       .       .         .
           851     19JAN82     214       .       .         .
           852     20JAN82     214       .       .         .
           853     21JAN82     214       .       .         .
           854     22JAN82     214       .       .         .
           855     23JAN82     214       .       .         .
           856     24JAN82     211       .       .         .
           857     25JAN82     211       .       .         .
           858     26JAN82     211       .       .         .
           859     27JAN82     211       .       .         .
           860     28JAN82     211       .       .         .
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                    RIO BLANCO OIL SHALE COMPANY
             ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                FIELD WATER QUALITY DATA - TRACT C-A

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-D8U -----------

         OBS      DATE       WL      TEMP     PH     SPC_COND

         861    29JAN82     211       .        .         .
         862    30JAN82     211       .        .         .
         863    31JAN82     223       .        .         .
         864    01FEB82     211       .        .         .
         865    02FEB82     221       .        .         .
         866    03FEB82     211       .        .         .
         867    04FEB82     211       .        .         .
         868    05FEB82     211       .        .         .
         869    06FEB82     211       .        .         .
         870    07FEB82     211       .        .         .
         871    08FEB82     211       .        .         .
         872    09FEB82     211       .        .         .
         873    10FEB82     211       .        .         .
         874    11FEB82     209       .        .         .
         875    12FEB82     209       .        .         .
         876    13FEB82     209       .        .         .
         877    14FEB82     209       .        .         .
         878    15FEB82     209       .        .         .
         879    16FEB82     209       .        .         .
         880    17FEB82     209       .        .         .
         881    18FEB82     209       .        .         .
         882    19FEB82     209       .        .         .
         883    20FEB82     209       .        .         .
         884    21FEB82     209       .        .         .
         885    22FEB82     209       .        .         .
         886    23FEB82     209       .        .         .
         887    24FEB82     209       .        .         .
         888    25FEB82     209       .        .         .
         889    26FEB82     209       .        .         .
         890    27FEB82     209       .        .         .
         891    28FEB82     209       .        .         .
         892    01MAR82     209       .        .         .
         893    02MAR82     209       .        .         .
         894    03MAR82     209       .        .         .
         895    04MAR82     209       .        .         .
         896    05MAR82     209       .        .         .
         897    06MAR82     209       .        .         .
         898    07MAR82     209       .        .         .
         899    08MAR82     209       .        .         .
         900    09MAR82     209       .        .         .
         901    10MAR82     209       .        .         .
         902    11MAR82     209       .        .         .
         903    12MAR82     209       .        .         .
         904    13MAR82     209       .        .         .
         905    14MAR82     209       .        .         .
         906    15MAR82     209       .        .         .
         907    16MAR82     209       .        .         .
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                     RIO BLANCO OIL SHALE COMPANY
              ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                 FIELD WATER QUALITY DATA - TRACT C-A

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-D8U ------------

                OBS     DATE        WL       TEMP      PH     SPC_COND

                908    17MAR82     209.0       .        .         .
                909    18MAR82     207.0       .        .         .
                910    19MAR82     207.0       .        .         .
                911    20MAR82     207.0       .        .         .
                912    21MAR82     207.0       .        .         .
                913    22MAR82     207.0       .        .         .
                914    23MAR82     207.0       .        .         .
                915    24MAR82     207.0       .        .         .
                916    25MAR82     207.0       .        .         .
                917    26MAR82     207.0       .        .         .
                918    27MAR82     207.0       .        .         .
                919    28MAR82     207.0       .        .         .
                920    29MAR82     207.0       .        .         .
                921    30MAR82     207.0       .        .         .
                922    31MAR82     207.0       .        .         .
                923    12OCT82     204.0       .        .         .
                924    18NOV82     214.8       .        .         .
                925    14DEC82     213.6       .        .         .

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-D9U ------------

                OBS     DATE        WL       TEMP      PH     SPC_COND

                926    07JAN82     272.2       .        .         .
                927    12JAN82     272.0       .        .         .
                928    21JAN82     271.8       .        .         .
                929    27JAN82     270.9       .        .         .
                930    03FEB82     270.6       .        .         .
                931    08FEB82     270.4       .        .         .
                932    17FEB82     270.0       .        .         .
                933    25FEB82     269.9       .        .         .
                934    03MAR82     269.3       .        .         .
                935    08MAR82     269.3       .        .         .
                936    18MAR82     268.8       .        .         .
                937    23MAR82     269.1       .        .         .
                938    29MAR82     269.0       .        .         .
                939    12OCT82     262.5       .        .         .
                940    18NOV82     262.5       .        .         .
                941    14DEC82     263.2       .        .         .
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                       RIO BLANCO OIL SHALE COMPANY
               ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                  FIELD WATER QUALITY DATA - TRACT C-A

---------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-MDP2CU ----------

            OBS      DATE        WL       TEMP      PH      SPC_COND

            942    07JAN82     594.7        .        .           .
            943    12JAN82     593.8        .        .           .
            944    21JAN82     592.0        .        .           .
            945    27JAN82     589.9        .        .           .
            946    28JAN82     590.1      16.0     8.0        1800
            947    03FEB82     589.6        .        .           .
            948    08FEB82     589.4        .        .           .
            949    17FEB82     588.8        .        .           .
            950    23FEB82     588.2        .        .           .
            951    03MAR82     588.0        .        .           .
            952    08MAR82     587.8        .        .           .
            953    16MAR82     587.9        .        .           .
            954    23MAR82     586.3        .        .           .
            955    29MAR82     585.9      16.3     8.0        1900
            956    08APR82     587.7        .        .           .
            957    15APR82     587.1        .        .           .
            958    22APR82     587.6      15.5     7.8        1700
            959    30APR82     586.5        .        .           .
            960    06MAY82     586.3        .        .           .
            961    14MAY82     586.8        .        .           .
            962    20MAY82     587.0        .        .           .
            963    25MAY82     587.2        .        .           .
            964    03JUN82     587.4        .        .           .
            965    10JUN82     587.6        .        .           .
            966    16JUN82     587.8        .        .           .
            967    21JUN82     587.9        .        .           .
            968    01JUL82     588.1        .        .           .
            969    08JUL82     588.6        .        .           .
            970    14JUL82     588.9        .        .           .
            971    21JUL82     589.3      15.5     7.7        1300
            972    27JUL82     589.2        .        .           .
            973    04AUG82     589.1        .        .           .
            974    10AUG82     589.2        .        .           .
            975    19AUG82     589.7        .        .           .
            976    25AUG82     589.8        .        .           .
            977    01SEP82     589.1        .        .           .
            978    09SEP82     587.6        .        .           .
            979    15SEP82     586.7        .        .           .
            980    22SEP82     587.9        .        .           .
            981    29SEP82     587.6        .        .           .
            982    07OCT82     587.9        .        .           .
            983    13OCT82     588.5        .        .           .
            984    20OCT82     588.2        .        .           .
            985    27OCT82     587.9      15.5     7.8        1500
            986    03NOV82     578.4        .        .           .
            987    05NOV82     565.7        .        .           .
            988    08NOV82     556.6        .        .           .
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                    RIO BLANCO OIL SHALE COMPANY
              ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                FIELD WATER QUALITY DATA - TRACT C-A

---------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-MDP2CU ----------

              OBS      DATE        WL       TEMP     PH     SPC_COND

              989     09NOV82     561.4      .       .         .
              990     10NOV82     564.2      .       .         .
              991     17NOV82     589.2      .       .         .
              992     24NOV82     590.5      .       .         .
              993     06DEC82     590.5      .       .         .
              994     14DEC82     590.8      .       .         .
              995     22DEC82     590.1      .       .         .
              996     29DEC82     590.2      .       .         .

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M1U ------------

              OBS      DATE        WL       TEMP     PH     SPC_COND

              997     25JAN82     600.0     13.5    7.6       1400
              998     29APR82     611.6     12.0    7.4       1300
              999     06MAY82     611.6       .      .           .
             1000     11MAY82     612.4       .      .           .
             1001     24MAY82     613.0       .      .           .
             1002     08JUN82     614.3       .      .           .
             1003     15JUN82     614.9       .      .           .
             1004     22JUN82     615.4       .      .           .
             1005     07JUL82     616.8       .      .           .
             1006     16JUL82     617.1     14.5    7.3       1200
             1007     22JUL82     617.2       .      .           .
             1008     26JUL82     617.3       .      .           .
             1009     05AUG82     617.9       .      .           .
             1010     11AUG82     618.4       .      .           .
             1011     20AUG82     619.3       .      .           .
             1012     26AUG82     620.1       .      .           .
             1013     31AUG82     620.8       .      .           .
             1014     07SEP82     621.2       .      .           .
             1015     15SEP82     621.9       .      .           .
             1016     23SEP82     621.5       .      .           .
             1017     30SEP82     620.5       .      .           .
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                  RIO BLANCO OIL SHALE COMPANY
           ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
              FIELD WATER QUALITY DATA - TRACT C-A

----------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M10U -----------

         OBS        DATE        WL       TEMP      PH       SPC_COND

         1018     11JAN82      53.0        .        .           .
         1019     24FEB82      52.8        .        .           .
         1020     29MAR82      52.7        .        .           .
         1021     19APR82      52.7        .        .           .
         1022     12MAY82      52.6        .        .           .
         1023     09JUN82      52.6        .        .           .
         1024     14JUL82      52.9      10.0      7.5        1250
         1025     26AUG82      53.4        .        .           .
         1026     17SEP82      51.6        .        .           .
         1027     28OCT82      52.9       8.5      7.8        1200

----------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M11U -----------

         OBS        DATE        WL       TEMP      PH       SPC_COND

         1028     11JAN82      25.8        .        .           .
         1029     24FEB82      25.5        .        .           .
         1030     29MAR82      25.5        .        .           .
         1031     19APR82      25.7        .        .           .
         1032     12MAY82      26.0        .        .           .
         1033     09JUN82      26.3        .        .           .
         1034     14JUL82      26.5       10       7.6        1250
         1035     26AUG82      26.4        .        .           .
         1036     17SEP82      28.3        .        .           .

----------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M12U -----------

        OBS        DATE        WL        TEMP      PH       SPC_COND

        1037     11JAN82     435.3        .        .           .
        1038     24FEB82     435.0        .        .           .
        1039     29MAR82     434.8        .        .           .
        1040     19APR82     434.6        .        .           .
        1041     12MAY82     439.1        .        .           .
        1042     09JUN82     439.3        .        .           .
        1043     14JUL82     439.1      14.5      7.4        1400
        1044     26AUG82     433.3        .        .           .
        1045     17SEP82     433.5        .        .           .
        1046     28OCT82     433.6      12.3      7.8        1300
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                    RIO BLANCO OIL SHALE COMPANY
             ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
               FIELD WATER QUALITY DATA - TRACT C-A

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M2U ------------

              OBS      DATE        WL      TEMP     PH     SPC_COND

              1047    18JAN82    216.5       .       .          .
              1048    29APR82    216.8    11.8     9.2       1550
              1049    12JUL82    216.9    12.8     9.0       1500

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M3U ------------

               OBS      DATE        WL     TEMP     PH     SPC_COND

               1050    11JAN82    11.7       .       .          .
               1051    29APR82    11.4     8.0     9.6       1275
               1052    06MAY82    11.4       .       .          .
               1053    11MAY82    11.9       .       .          .
               1054    24MAY82    11.8       .       .          .
               1055    08JUN82    12.0       .       .          .
               1056    15JUN82    12.0       .       .          .
               1057    22JUN82    12.2       .       .          .
               1058    07JUL82    12.4       .       .          .
               1059    12JUL82    12.4    11.0     9.4       1200
               1060    16JUL82    12.4       .       .          .
               1061    22JUL82    12.4       .       .          .
               1062    26JUL82    12.4       .       .          .
               1063    05AUG82    12.5       .       .          .
               1064    11AUG82    12.5       .       .          .
               1065    20AUG82    12.1       .       .          .
               1066    26AUG82    12.1       .       .          .
               1067    31AUG82    12.6       .       .          .
               1068    07SEP82    12.2       .       .          .
               1069    15SEP82    12.0       .       .          .
               1070    23SEP82    12.0       .       .          .
               1071    30SEP82    11.7       .       .          .
               1072    28OCT82    12.1     7.8     9.7       1150

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M4U ------------

              OBS      DATE        WL      TEMP     PH     SPC_COND

              1073    28JAN82    550.7    14.2     8.3       1700
              1074    11MAY82    541.8       .       .          .
              1075    24MAY82    541.8       .       .          .
              1076    08JUN82    540.9       .       .          .
              1077    15JUN82    540.8       .       .          .
              1078    22JUN82    540.7       .       .          .
              1079    07JUL82    540.4       .       .          .
              1080    16JUL82    540.2       .       .          .
              1081    22JUL82    539.9       .       .          .
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                    RIO BLANCO OIL SHALE COMPANY
              ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                FIELD WATER QUALITY DATA - TRACT C-A

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M4U ------------

             OBS       DATE        WL       TEMP     PH     SPC_COND

             1082    26JUL82     539.7       .        .         .
             1083    05AUG82     540.1       .        .         .
             1084    11AUG82     540.0       .        .         .
             1085    20AUG82     539.9       .        .         .
             1086    26AUG82     539.8       .        .         .
             1087    31AUG82     539.9       .        .         .
             1088    07SEP82     539.3       .        .         .
             1089    15SEP82     538.5       .        .         .
             1090    23SEP82     538.4       .        .         .
             1091    30SEP82     537.9       .        .         .

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M5U ------------

             OBS       DATE        WL       TEMP     PH     SPC_COND

             1092    31JAN82     233.0       .        .         .
             1093    14APR82     233.0     11.0      8.5      3000
             1094    12JUL82     233.3     13.3      7.6      3250

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M6U ------------

             OBS       DATE        WL       TEMP     PH     SPC_COND

             1095    25JAN82     474.5     13.2      8.0      1500
             1096    03FEB82     474.4       .        .         .
             1097    10FEB82     474.3       .        .         .
             1098    29APR82     473.6     13.0      7.8      1800
             1099    16JUL82     472.4     13.5      7.4      1400

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M7U ------------

             OBS       DATE        WL       TEMP     PH     SPC_COND

             1100    25JAN82     425.1     12.0      7        1800
             1101    29APR82     424.3     12.0      7        1725
             1102    12MAY82     424.4       .       .          .
             1103    09JUN82     424.6       .       .          .
             1104    16JUL82     424.4     12.5      7        1600
             1105    26AUG82     424.3       .       .          .
             1106    17SEP82     424.3       .       .          .
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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                      FIELD WATER QUALITY DATA - TRACT C-A

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M8U ------------

                OBS       DATE         WL      TEMP     PH      SPC_COND

                1107    28JAN82       49.4       9.9    8.2       1550
                1108    03FEB82       49.5        .      .           .
                1109    10FEB82       49.3        .      .           .
                1110    29APR82       49.4      11.0    7.7       1500
                1111    12MAY82       49.5        .      .           .
                1112    09JUN82       49.2        .      .           .
                1113    12JUL82       51.5      10.5    8.2       1200
                1114    26AUG82       52.7        .      .           .
                1115    17SEP82       53.5        .      .           .

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-M9U ------------

                OBS       DATE         WL      TEMP     PH      SPC_COND

                1116    11JAN82      291.3      .      .           .
                1117    24FEB82      290.4      .      .           .
                1118    29MAR82      288.6      .      .           .
                1119    19APR82      288.7      .      .           .
                1120    12MAY82      288.7      .      .           .
                1121    09JUN82      286.9      .      .           .
                1122    14JUL82      286.0     13      7        3000
                1123    26AUG82      285.1      .      .           .
                1124    21SEP82      285.2      .      .           .

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-10U ------------

                OBS       DATE         WL      TEMP     PH      SPC_COND

                1125    07JAN82      402.8      .      .           .
                1126    11JAN82      402.0      .      .           .
                1127    21JAN82      401.6      .      .           .
                1128    27JAN82      403.8      .      .           .
                1129    03FEB82      404.2      .      .           .
                1130    08FEB82      404.8      .      .           .
                1131    17FEB82      405.2      .      .           .
                1132    18FEB82      405.2      .      .           .
                1133    24FEB82      404.1      .      .           .
                1134    03MAR82      408.4      .      .           .
                1135    08MAR82      403.2      .      .           .
                1136    18MAR82      404.1      .      .           .
                1137    23MAR82      405.4      .      .           .
                1138    26MAR82      405.7      .      .           .
                1139    19APR82      406.1      .      .           .
                1140    06MAY82      406.1      .      .           .
                1141    11MAY82      405.9      .      .           .
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                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     FIELD WATER QUALITY DATA - TRACT C-A

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-10U -----------

              OBS       DATE        WL       TEMP     PH     SPC_COND

              1142     24MAY82     405.4       .       .         .
              1143     08JUN82     405.7       .       .         .
              1144     15JUN82     405.9       .       .         .
              1145     22JUN82     405.9       .       .         .
              1146     07JUL82     407.0       .       .         .
              1147     16JUL82     407.4      14       7       2000
              1148     22JUL82     407.0       .       .         .
              1149     26JUL82     406.7       .       .         .
              1150     05AUG82     404.2       .       .         .
              1151     11AUG82     404.0       .       .         .
              1152     20AUG82     402.9       .       .         .
              1153     26AUG82     402.4       .       .         .
              1154     31AUG82     405.1       .       .         .
              1155     07SEP82     406.8       .       .         .
              1156     15SEP82     409.1       .       .         .
              1157     23SEP82     405.3       .       .         .
              1158     30SEP82     402.6       .       .         .

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-13U -----------

              OBS       DATE        WL       TEMP     PH     SPC_COND

              1159     07JAN82     425.8       .       .         .
              1160     11JAN82     426.0       .       .         .
              1161     21JAN82     426.2       .       .         .
              1162     27JAN82     426.3       .       .         .
              1163     03FEB82     426.4       .       .         .
              1164     08FEB82     426.6       .       .         .
              1165     18FEB82     426.8       .       .         .
              1166     25FEB82     426.8       .       .         .
              1167     03MAR82     426.5       .       .         .
              1168     08MAR82     426.8       .       .         .
              1169     18MAR82     427.5       .       .         .
              1170     23MAR82     427.0       .       .         .
              1171     26MAR82     427.0       .       .         .
              1172     20APR82     426.8       .       .         .
              1173     15JUL82     426.4     13.8     7.4      1425
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                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     FIELD WATER QUALITY DATA - TRACT C-A

------------ REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-15U ------------

             OBS       DATE        WL       TEMP      PH       SPC_COND

             1174     05AUG82     301.5       .        .           .
             1175     11AUG82     301.5       .        .           .
             1176     20AUG82     301.3       .        .           .
             1177     26AUG82     301.4       .        .           .
             1178     31AUG82     301.4       .        .           .
             1179     07SEP82     301.5       .        .           .
             1180     15SEP82     301.5       .        .           .
             1181     23SEP82     301.5       .        .           .
             1182     30SEP82     301.4       .        .           .
             1183     26OCT82     301.2     11.6      9.1        1600

----------- REPORT YEAR=1982   TYPE=UPPER AQUIFER   STATION=GS-2-3U ------------

             OBS       DATE        WL       TEMP      PH       SPC_COND

             1184     27JAN82     195.2     11.8      7.2        1600

------------ REPORT YEAR=1982   TYPE=UPPER AGUIFER   STATION=GS-9U -------------

             OBS       DATE        WL       TEMP      PH       SPC_COND

             1185     25JAN82     354.4       .        .           .
             1186     26MAR82     354.8       .        .           .
             1187     19APR82     355.2       .        .           .
             1188     19JUL82     350.0      14       7.9        1000
```

APPENDIX 5-1.4

1982 Water Quality MANOVA Results

- o Dewatering/Reinjection System (Section 5.1)
  - Upper Aquifer Duncan's Multiple Range Test Results*
  - Upper Aquifer MANOVA Test Results

- o MIS Development Area
  - Alluvial Aquifer Duncan's Multiple Range Test Results*
  - Alluvial Aquifer MANOVA Test Results
  - Upper Aquifer Duncan's Multiple Range Test Results*
  - Upper Aquifer MANOVA Test Results

* Only Duncan's test results for constituents with significant (.05 level) main effects (year or area) are listed.

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                         RIO BLANCO OIL SHALE COMPANY
                    ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                       DEWATERING AND REINJECTION SYSTEM
                               TYPE=UPPER AQUIFER

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CL
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=237  MSE=111.031
HARMONIC MEAN OF CELL SIZES=12.0332

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  RPTYR

                A            18.395      20  1976
                A
        B       A            16.605      77  1975
        B       A
        B       A            13.545      65  1980
        B       A
        B       A            12.844       9  1979
        B       A
        B       A            11.194      58  1981
        B       A
        B       A            11.010      24  1982
        B
        B                     7.000       3  1978
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                       ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                           DEWATERING AND REINJECTION SYSTEM
                                  TYPE=UPPER AQUIFER

                          GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: F
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=237  MSE=19.1508
HARMONIC MEAN OF CELL SIZES=12.0332

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN      N  RPTYR

                A             3.0657     77  1975
                A
                A             3.0150     20  1976
                A
                A             1.7333      3  1978
                A
                A             0.9329     24  1982
                A
                A             0.6944      9  1979
                A
                A             0.6185     65  1980
                A
                A             0.3988     58  1981
```

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                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

          MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                      DEWATERING AND REINJECTION SYSTEM
                             TYPE=UPPER AQUIFER

                       GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: NA
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=237  MSE=26094.3
HARMONIC MEAN OF CELL SIZES=12.0332

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN       N  RPTYR

                A           324.50      20  1976
                A
                A           299.42      77  1975
                A
                A           221.67       3  1978
                A
                A           204.67       9  1979
                A
                A           200.11      65  1980
                A
                A           193.88      58  1981
                A
                A           179.13      24  1982
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                    ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

             MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                        DEWATERING AND REINJECTION SYSTEM
                               TYPE=UPPER AQUIFER

                          GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: MG
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=237  MSE=1209.56
HARMONIC MEAN OF CELL SIZES=12.0332

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN       N   RPTYR

                A              91.705      65   1980
                A
                A              88.433       3   1978
                A
                A              84.625      24   1982
                A
                A              82.069      58   1981
                A
                A              78.556       9   1979
                A
                A              65.452      77   1975
                A
                A              63.430      20   1976
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                    RIO BLANCO OIL SHALE COMPANY
              ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

         MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                  DEWATERING AND REINJECTION SYSTEM
                         TYPE=UPPER AQUIFER

                    GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: PH
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=237  MSE=0.398707
HARMONIC MEAN OF CELL SIZES=12.0332

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING            MEAN       N  RPTYR

                A          8.0000       9  1979
                A
                A          7.9983      58  1981
                A
                A          7.9351      65  1980
                A
                A          7.7167      24  1982
                A
                A          7.4333       3  1978

                B          6.8550      20  1976
                B
                B          6.8234      77  1975
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                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                       DEWATERING AND REINJECTION SYSTEM
                               TYPE=UPPER AQUIFER

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: SO4
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=237  MSE=41990
HARMONIC MEAN OF CELL SIZES=67.6271

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                 MEAN       N  AREA

               A                478.24     149  FAR FIELD
               A
               A                450.84      58  CONTROL

               B                291.31      49  NEAR FIELD
```

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                 ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

          MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                    DEWATERING AND REINJECTION SYSTEM
                           TYPE=UPPER AQUIFER

                     GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: HCO3
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=237  MSE=134949
HARMONIC MEAN OF CELL SIZES=67.6271

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  AREA

               A             663.15     149  FAR FIELD
               A
               A             556.52      58  CONTROL
               A
               A             538.12      49  NEAR FIELD
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                            RIO BLANCO OIL SHALE COMPANY
                      ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

              MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                          DEWATERING AND REINJECTION SYSTEM
                                 TYPE=UPPER AQUIFER

                          GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: NA
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=237  MSE=26094.3
HARMONIC MEAN OF CELL SIZES=67.6271

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  AREA

                 A           267.45    149  FAR FIELD
                 A
         B       A           218.76     49  NEAR FIELD
         B
         B                   173.00     58  CONTROL
```

```
                        RIO BLANCO OIL SHALE COMPANY
                 ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

        MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                   DEWATERING AND REINJECTION SYSTEM
                          TYPE=UPPER AQUIFER

                     GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: MG
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=237  MSE=1209.56
HARMONIC MEAN OF CELL SIZES=67.6271

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  AREA

                A            85.753    149  FAR FIELD
                A
                A            75.940     58  CONTROL

                B            58.180     49  NEAR FIELD
```

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                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                      DEWATERING AND REINJECTION SYSTEM
                             TYPE=UPPER AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CA
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=237  MSE=3225.59
HARMONIC MEAN OF CELL SIZES=67.6271

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                 MEAN      N  AREA

                A               103.23     58  CONTROL

                B                68.64    149  FAR FIELD

                C                36.76     49  NEAR FIELD
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               ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

        MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                   DEWATERING AND REINJECTION SYSTEM
                           TYPE=UPPER AQUIFER

                    GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: ALK
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=237  MSE=103857
HARMONIC MEAN OF CELL SIZES=67.6271

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  AREA

                A            602.18     149  FAR FIELD

                B            473.00      58  CONTROL
                B
                B            467.24      49  NEAR FIELD
```

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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

             MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                        DEWATERING AND REINJECTION SYSTEM
                               TYPE=UPPER AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: SPC_COND
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=237  MSE=339708
HARMONIC MEAN OF CELL SIZES=67.6271

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN       N  AREA

                A           1746.8     149  FAR FIELD

                B           1514.8      58  CONTROL
                B
                B           1322.2      49  NEAR FIELD
```

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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                       DEWATERING AND REINJECTION SYSTEM
                               TYPE=UPPER AQUIFER

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: TDS
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=237  MSE=195144
HARMONIC MEAN OF CELL SIZES=67.6271

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                 MEAN       N  AREA

               A                1297.8     149  FAR FIELD

               B                1138.0      58  CONTROL

               C                 945.2      49  NEAR FIELD
```

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                    RIO BLANCO OIL SHALE COMPANY
               ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

       MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                  DEWATERING AND REINJECTION SYSTEM
                        TYPE=UPPER AQUIFER

                    GENERAL LINEAR MODELS PROCEDURE

  MANOVA TEST CRITERIA FOR THE HYPOTHESIS OF NO OVERALL RPTYR EFFECT

                     H = TYPE I SS&CP MATRIX FOR: RPTYR
                     E = ERROR SS&CP MATRIX
                     P = DEP. VARIABLES =       11
                     Q = HYPOTHESIS DF  =        6
                     NE= DF OF E        =      237
                     S = MIN(P,Q)       =        6
                     M = .5(ABS(P-Q)-1) =      2.0
                     N = .5(NE-P-1)     =    112.5

    ------------------------------------------------------------

    HOTELLING-LAWLEY TRACE = TR(E**-1*H) =              3.55008981

          F APPROXIMATION = 2(S*N+1)*TR(E**-1*H)/(S*S*(2M+S+1))
                            WITH S(2M+S+1) AND 2(S*N+1) DF

             F(66,1352) =    12.12     PROB > F = 0.0001

    ------------------------------------------------------------

    PILLAI'S TRACE          V = TR(H*INV(H+E)) =        1.08385270

          F APPROXIMATION = (2N+S+1)/(2M+S+1) * V/(S-V)
                            WITH S(2M+S+1) AND S(2N+S+1) DF

             F(66,1392) =     4.65     PROB > F = 0.0001

    ------------------------------------------------------------

    WILKS' CRITERION        L = DET(E)/DET(H+E) =       0.17008513

          W = -(NE-.5(P-Q+1))*LN(L)              =        414.5208
          U = NE-.5(P-Q+1)                       =        234.0000
          Z = SQRT((P*P*Q*Q-4)/(P*P+Q*Q-5)       =          5.3508
          B = (P*Q-2)/4                          =         16.0000

          F APPROXIMATION = (U*Z-2B)/(P*Q)*(1-L**1/Z)/L**1/Z
                            WITH P*Q AND U*Z-2B DF

             F(66,1220) =     7.25     PROB > F = 0.0001

    ------------------------------------------------------------
```

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                     RIO BLANCO OIL SHALE COMPANY
              ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

        MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                   DEWATERING AND REINJECTION SYSTEM
                          TYPE=UPPER AQUIFER

                      GENERAL LINEAR MODELS PROCEDURE

   MANOVA TEST CRITERIA FOR THE HYPOTHESIS OF NO OVERALL RPTYR EFFECT

     ROY'S MAXIMUM ROOT CRITERION =                         3.19689994

              FIRST CANONICAL VARIABLE YIELDS AN F UPPER BOUND

                    F(6,237) =   126.28     (UPPER BOUND)

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                     RIO BLANCO OIL SHALE COMPANY
              ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

     MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                 DEWATERING AND REINJECTION SYSTEM
                        TYPE=UPPER AQUIFER

                    GENERAL LINEAR MODELS PROCEDURE

MANOVA TEST CRITERIA FOR THE HYPOTHESIS OF NO OVERALL AREA EFFECT

                    H = TYPE I SS&CP MATRIX FOR: AREA
                    E = ERROR SS&CP MATRIX
                    P = DEP. VARIABLES =       11
                    Q = HYPOTHESIS DF  =        2
                    NE= DF OF E        =      237
                    S = MIN(P,Q)       =        2
                    M = .5(ABS(P-Q)-1) =      4.0
                    N = .5(NE-P-1)     =    112.5

   ------------------------------------------------------------

   HOTELLING-LAWLEY TRACE = TR(E**-1*H) =             0.61402984

           F APPROXIMATION = 2(S*N+1)*TR(E**-1*H)/(S*S*(2M+S+1))
                             WITH S(2M+S+1) AND 2(S*N+1) DF

                 F(22,452) =     6.31     PROB > F = 0.0001

   ------------------------------------------------------------

   PILLAI'S TRACE          V = TR(H*INV(H+E)) =       0.46303880

           F APPROXIMATION = (2N+S+1)/(2M+S+1) * V/(S-V)
                             WITH S(2M+S+1) AND S(2N+S+1) DF

                 F(22,456) =     6.24     PROB > F = 0.0001

   ------------------------------------------------------------

   WILKS' CRITERION        L = DET(E)/DET(H+E) =      0.58796620

           EXACT F = (1-SQRT(L))/SQRT(L)*(NE+Q-P-1)/P
                             WITH 2P AND 2(NE+Q-P-1) DF

                 F(22,454) =     6.28     PROB > F = 0.0001

   ------------------------------------------------------------
```

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                    RIO BLANCO OIL SHALE COMPANY
              ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

       MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                  DEWATERING AND REINJECTION SYSTEM
                         TYPE=UPPER AQUIFER

                   GENERAL LINEAR MODELS PROCEDURE

 MANOVA TEST CRITERIA FOR THE HYPOTHESIS OF NO OVERALL AREA EFFECT

    ROY'S MAXIMUM ROOT CRITERION =                         0.39367503

           FIRST CANONICAL VARIABLE YIELDS AN F UPPER BOUND

                F(2,237) =    46.65     (UPPER BOUND)

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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                        MODIFIED INSITU DEVELOPMENT SYSTEM
                              TYPE=ALLUVIAL AQUIFER

                          GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: TDS
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=6483.78
HARMONIC MEAN OF CELL SIZES=15.3243

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN      N   AREA

              A                1255.0     27   FAR FIELD

              B                1120.6      7   NEAR FIELD

              C                 776.6     63   CONTROL
```

```
                            RIO BLANCO OIL SHALE COMPANY
                     ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

              MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                         MODIFIED INSITU DEVELOPMENT SYSTEM
                               TYPE=ALLUVIAL AQUIFER

                           GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: SPC_COND
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=22592.4
HARMONIC MEAN OF CELL SIZES=15.3243

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  AREA

                A            1733.0     27  FAR FIELD

                B            1503.6      7  NEAR FIELD

                C            1096.6     63  CONTROL
```

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                           RIO BLANCO OIL SHALE COMPANY
                    ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

              MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                        MODIFIED INSITU DEVELOPMENT SYSTEM
                              TYPE=ALLUVIAL AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: PH
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=.0787007
HARMONIC MEAN OF CELL SIZES=15.3243

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  AREA

              A             7.6286      7  NEAR FIELD

              B             6.8351     63  CONTROL
              B
              B             6.7741     27  FAR FIELD
```

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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                      MODIFIED INSITU DEVELOPMENT SYSTEM
                            TYPE=ALLUVIAL AQUIFER

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: ALK
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=4442.54
HARMONIC MEAN OF CELL SIZES=15.3243

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  AREA

              A              498.29       7  NEAR FIELD
              A
              A              498.00      27  FAR FIELD

              B              378.94      63  CONTROL
```

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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

           MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                     MODIFIED INSITU DEVELOPMENT SYSTEM
                           TYPE=ALLUVIAL AQUIFER

                       GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CA
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=563.368
HARMONIC MEAN OF CELL SIZES=15.3243

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  AREA

                A            115.57      7  NEAR FIELD

                B             97.30     27  FAR FIELD
                B
                B             91.07     63  CONTROL
```

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                          RIO BLANCO OIL SHALE COMPANY
                    ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

             MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                       MODIFIED INSITU DEVELOPMENT SYSTEM
                             TYPE=ALLUVIAL AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: MG
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=335.5
HARMONIC MEAN OF CELL SIZES=15.3243

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN      N  AREA

                A             104.96     27  FAR FIELD

                B              89.29      7  NEAR FIELD

                C              49.64     63  CONTROL
```

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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

             MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                        MODIFIED INSITU DEVELOPMENT SYSTEM
                              TYPE=ALLUVIAL AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: NA
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=1027.48
HARMONIC MEAN OF CELL SIZES=15.3243

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  AREA

               A             185.48     27  FAR FIELD

               B             138.57      7  NEAR FIELD

               C             114.59     63  CONTROL
```

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                         RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

          MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                       MODIFIED INSITU DEVELOPMENT SYSTEM
                             TYPE=ALLUVIAL AQUIFER

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CL
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=39.3051
HARMONIC MEAN OF CELL SIZES=15.3243

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  AREA

                A           18.093     27  FAR FIELD
                A
        B       A           13.986      7  NEAR FIELD
        B
        B                   13.142     63  CONTROL
```

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                    RIO BLANCO OIL SHALE COMPANY
             ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

      MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                MODIFIED INSITU DEVELOPMENT SYSTEM
                      TYPE=ALLUVIAL AQUIFER

                  GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: HCO3
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=1584.41
HARMONIC MEAN OF CELL SIZES=15.3243

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN  GROUPING              MEAN       N  AREA

              A             589.07      27  FAR FIELD
              A
              A             585.14       7  NEAR FIELD

              B             443.21      63  CONTROL
```

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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

              MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                        MODIFIED INSITU DEVELOPMENT SYSTEM
                              TYPE=ALLUVIAL AQUIFER

                          GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: SO4
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=2412.18
HARMONIC MEAN OF CELL SIZES=15.3243

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  AREA

                A            516.19     27  FAR FIELD

                B            454.29      7  NEAR FIELD

                C            258.16     63  CONTROL
```

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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                       MODIFIED INSITU DEVELOPMENT SYSTEM
                             TYPE=ALLUVIAL AQUIFER

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: TDS
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=6483.78
HARMONIC MEAN OF CELL SIZES=5.8626

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  RPTYR

               A            1058.3      3  1977
               A
               A            1052.8     12  1982
               A
               A            1047.3     12  1981
               A
               A            1036.7      3  1979

               B             936.9     24  1976
               B
       C       B             870.2     32  1975
       C
       C                     835.0      3  1978
       C
       C                     791.8      8  1980
```

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                          RIO BLANCO OIL SHALE COMPANY
                    ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

              MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                      MODIFIED INSITU DEVELOPMENT SYSTEM
                            TYPE=ALLUVIAL AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: SPC_COND
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=22592.4
HARMONIC MEAN OF CELL SIZES=5.8626

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  RPTYR

                A            2006.7      3  1979

                B            1475.0     12  1982
                B
                B            1460.0      3  1977
                B
                B            1383.3      3  1978
                B
                B            1364.6     12  1981
                B
        C       B            1311.4     24  1976
        C
        C       D            1175.2     32  1975
                D
                D            1087.5      8  1980
```

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                              RIO BLANCO OIL SHALE COMPANY
                         ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

                 MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                            MODIFIED INSITU DEVELOPMENT SYSTEM
                                  TYPE=ALLUVIAL AQUIFER

                               GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: PH
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=.0787007
HARMONIC MEAN OF CELL SIZES=5.8626

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  RPTYR

                A            7.5762      8  1980
                A
                A            7.5667      3  1978
                A
                A            7.5667     12  1982
                A
                A            7.5250     12  1981
                A
                A            7.3000      3  1979

                B            6.8333      3  1977

                C            6.4812     32  1975
                C
                C            6.3625     24  1976
```

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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                       MODIFIED INSITU DEVELOPMENT SYSTEM
                             TYPE=ALLUVIAL AQUIFER

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CA
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=563.368
HARMONIC MEAN OF CELL SIZES=5.8626

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  RPTYR

               A             115.75     12  1981
               A
       B       A             105.92     12  1982
       B       A
       B       A              95.67      3  1979
       B       A
       B       A              95.01      8  1980
       B       A
       B       A   C          90.38     32  1975
       B       A   C
       B       A   C          89.13     24  1976
       B           C
       B           C          80.67      3  1978
                   C
                   C          64.33      3  1977
```

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                         RIO BLANCO OIL SHALE COMPANY
                    ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

             MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                        MODIFIED INSITU DEVELOPMENT SYSTEM
                              TYPE=ALLUVIAL AQUIFER

                          GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: MG
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=335.5
HARMONIC MEAN OF CELL SIZES=5.8626

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  RPTYR

                A            91.000       3  1977
                A
        B       A            86.083      12  1981
        B       A
        B       A            83.500      12  1982
        B       A
        B       A   C        73.333       3  1979
        B           C
        B           C        65.125      24  1976
                    C
                    C        58.525       8  1980
                    C
                    C        57.947      32  1975
                    C
                    C        57.667       3  1978
```

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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                       MODIFIED INSITU DEVELOPMENT SYSTEM
                             TYPE=ALLUVIAL AQUIFER

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: NA
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=1027.48
HARMONIC MEAN OF CELL SIZES=5.8626

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  RPTYR

               A             193.33      3  1978
               A
       B       A             166.67      3  1977
       B
       B       C             146.38     24  1976
       B       C
       B       C             142.67      3  1979
       B       C
       B       C             140.00     32  1975
       B       C
       B       C             130.67     12  1982
               C
       D       C             117.08     12  1981
       D
       D                      90.38      8  1980
```

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                    RIO BLANCO OIL SHALE COMPANY
              ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

        MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                   MODIFIED INSITU DEVELOPMENT SYSTEM
                         TYPE=ALLUVIAL AQUIFER

                     GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: F
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=.0147444
HARMONIC MEAN OF CELL SIZES=5.8626

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  RPTYR

              A             0.39375      32  1975
              A
       B      A             0.33333       3  1979
       B      A
       B      A             0.32500      12  1982
       B      A
       B      A             0.31000       8  1980
       B      A
       B      A   C         0.26667      24  1976
       B          C
       B          C         0.20000       3  1977
       B          C
       B          C         0.18833      12  1981
                  C
                  C         0.13333       3  1978
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                              RIO BLANCO OIL SHALE COMPANY
                        ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

                  MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                             MODIFIED INSITU DEVELOPMENT SYSTEM
                                   TYPE=ALLUVIAL AQUIFER

                              GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: HCO3
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=1584.41
HARMONIC MEAN OF CELL SIZES=5.8626

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  RPTYR

                A            552.50     12  1982
                A
                A            540.67      3  1979
                A
                A            538.33      3  1977
                A
        B       A            520.25     12  1981
        B
        B       C            479.06     32  1975
        B       C
        B       C            475.83     24  1976
                C
                C            464.13      8  1980
                C
                C            450.00      3  1978
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                         RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                      MODIFIED INSITU DEVELOPMENT SYSTEM
                            TYPE=ALLUVIAL AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: SO4
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=80  MSE=2412.18
HARMONIC MEAN OF CELL SIZES=5.8626

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  RPTYR

                A           433.58     12  1981
                A
                A           421.17     12  1982
                A
                A           420.00      3  1979
                A
        B       A           396.67      3  1977
        B
        B       C           345.42     24  1976
                C
        D       C           318.33      3  1978
        D       C
        D       C           290.63     32  1975
        D
        D                   266.13      8  1980
```

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                         RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

          MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                       MODIFIED INSITU DEVELOPMENT SYSTEM
                              TYPE=ALLUVIAL AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

 MANOVA TEST CRITERIA FOR THE HYPOTHESIS OF NO OVERALL RPTYR EFFECT

                              H = TYPE I SS&CP MATRIX FOR: RPTYR
                              E = ERROR SS&CP MATRIX
                              P = DEP. VARIABLES =        11
                              Q = HYPOTHESIS DF  =         7
                              NE= DF OF E        =        80
                              S = MIN(P,Q)       =         7
                              M = .5(ABS(P-Q)-1) =       1.5
                              N = .5(NE-P-1)     =      34.0

    --------------------------------------------------------------

    HOTELLING-LAWLEY TRACE = TR(E**-1*H) =              9.83435342

             F APPROXIMATION = 2(S*N+1)*TR(E**-1*H)/(S*S*(2M+S+1))
                               WITH S(2M+S+1) AND 2(S*N+1) DF

                   F(77,478) =     8.72     PROB > F = 0.0001

    --------------------------------------------------------------

    PILLAI'S TRACE          V = TR(H*INV(H+E)) =        2.57177045

             F APPROXIMATION = (2N+S+1)/(2M+S+1) * V/(S-V)
                               WITH S(2M+S+1) AND S(2N+S+1) DF

                   F(77,532) =     4.01     PROB > F = 0.0001

    --------------------------------------------------------------

    WILKS' CRITERION        L = DET(E)/DET(H+E) =       0.01235286

             W = -(NE-.5(P-Q+1))*LN(L)           =        340.5247
             U = NE-.5(P-Q+1)                    =         77.5000
             Z = SQRT((P*P*Q*Q-4)/(P*P+Q*Q-5)    =          5.9924
             B = (P*Q-2)/4                       =         18.7500

             F APPROXIMATION = (U*Z-2B)/(P*Q)*(1-L**1/Z)/L**1/Z
                               WITH P*Q AND U*Z-2B DF

                   F(77,426) =     6.00     PROB > F = 0.0001

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                      RIO BLANCO OIL SHALE COMPANY
                 ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

        MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                   MODIFIED INSITU DEVELOPMENT SYSTEM
                         TYPE=ALLUVIAL AQUIFER

                      GENERAL LINEAR MODELS PROCEDURE

MANOVA TEST CRITERIA FOR THE HYPOTHESIS OF NO OVERALL RPTYR EFFECT

   ROY'S MAXIMUM ROOT CRITERION =                          6.01194149

            FIRST CANONICAL VARIABLE YIELDS AN F UPPER BOUND

                  F(7,80) =    68.71     (UPPER BOUND)

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                    RIO BLANCO OIL SHALE COMPANY
              ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

        MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                  MODIFIED INSITU DEVELOPMENT SYSTEM
                        TYPE=ALLUVIAL AQUIFER

                   GENERAL LINEAR MODELS PROCEDURE

  MANOVA TEST CRITERIA FOR THE HYPOTHESIS OF NO OVERALL AREA EFFECT

                        H = TYPE I SS&CP MATRIX FOR: AREA
                        E = ERROR SS&CP MATRIX
                        P = DEP. VARIABLES =       11
                        Q = HYPOTHESIS DF  =        2
                        NE= DF OF E        =       80
                        S = MIN(P,Q)       =        2
                        M = .5(ABS(P-Q)-1) =      4.0
                        N = .5(NE-P-1)     =     34.0

    ------------------------------------------------------------

    HOTELLING-LAWLEY TRACE = TR(E**-1*H) =           18.42474180

           F APPROXIMATION = 2(S*N+1)*TR(E**-1*H)/(S*S*(2M+S+1))
                             WITH S(2M+S+1) AND 2(S*N+1) DF

                 F(22,138) =     57.79      PROB > F = 0.0001

    ------------------------------------------------------------

    PILLAI'S TRACE          V = TR(H*INV(H+E)) =      1.47902105

           F APPROXIMATION = (2N+S+1)/(2M+S+1) * V/(S-V)
                             WITH S(2M+S+1) AND S(2N+S+1) DF

                 F(22,142) =     18.32      PROB > F = 0.0001

    ------------------------------------------------------------

    WILKS' CRITERION        L = DET(E)/DET(H+E) =     0.02550725

           EXACT F = (1-SQRT(L))/SQRT(L)*(NE+Q-P-1)/P
                             WITH 2P AND 2(NE+Q-P-1) DF

                 F(22,140) =     33.48      PROB > F = 0.0001

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                      RIO BLANCO OIL SHALE COMPANY
                 ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

        MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                   MODIFIED INSITU DEVELOPMENT SYSTEM
                         TYPE=ALLUVIAL AQUIFER

                     GENERAL LINEAR MODELS PROCEDURE

MANOVA TEST CRITERIA FOR THE HYPOTHESIS OF NO OVERALL AREA EFFECT

   ROY'S MAXIMUM ROOT CRITERION =                        17.28008286

            FIRST CANONICAL VARIABLE YIELDS AN F UPPER BOUND

                F(2,80) =    691.20     (UPPER BOUND)

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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                       MODIFIED INSITU DEVELOPMENT SYSTEM
                               TYPE=UPPER AQUIFER

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: TDS
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=156  MSE=165453
HARMONIC MEAN OF CELL SIZES=54.5805

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  AREA

               A            1379.5     64  CONTROL

               B            1161.0     73  NEAR FIELD
               B
               B            1120.0     39  FAR FIELD
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                              RIO BLANCO OIL SHALE COMPANY
                       ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

                MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                          MODIFIED INSITU DEVELOPMENT SYSTEM
                                  TYPE=UPPER AQUIFER

                            GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: PH
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=156  MSE=0.155638
HARMONIC MEAN OF CELL SIZES=54.5805

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N   AREA

               A             8.2846     39   FAR FIELD

               B             7.5559     73   NEAR FIELD

               C             7.2334     64   CONTROL
```

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                           RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

             MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                       MODIFIED INSITU DEVELOPMENT SYSTEM
                              TYPE=UPPER AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CA
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=156  MSE=1449.4
HARMONIC MEAN OF CELL SIZES=54.5805

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  AREA

                A           106.44     64  CONTROL

                B            58.69     73  NEAR FIELD

                C            26.11     39  FAR FIELD
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                         RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                       MODIFIED INSITU DEVELOPMENT SYSTEM
                               TYPE=UPPER AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: MG
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=156  MSE=988.472
HARMONIC MEAN OF CELL SIZES=54.5805

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN       N  AREA

               A               93.346      39  FAR FIELD
               A
               A               92.719      64  CONTROL

               B               70.403      73  NEAR FIELD
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                           RIO BLANCO OIL SHALE COMPANY
                    ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

             MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                        MODIFIED INSITU DEVELOPMENT SYSTEM
                               TYPE=UPPER AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: F
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=156  MSE=17.7635
HARMONIC MEAN OF CELL SIZES=54.5805

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  AREA

                A            3.1493     73  NEAR FIELD

                B            0.6995     39  FAR FIELD
                B
                B            0.5817     64  CONTROL
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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                      MODIFIED INSITU DEVELOPMENT SYSTEM
                              TYPE=UPPER AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CL
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=156  MSE=104.205
HARMONIC MEAN OF CELL SIZES=54.5805

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  AREA

                A           15.642     39  FAR FIELD
                A
                A           15.516     73  NEAR FIELD

                B           10.915     64  CONTROL
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                         RIO BLANCO OIL SHALE COMPANY
                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

          MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                      MODIFIED INSITU DEVELOPMENT SYSTEM
                              TYPE=UPPER AQUIFER

                      GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: HCO3
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=156  MSE=117436
HARMONIC MEAN OF CELL SIZES=54.5805

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN       N  AREA

                A           724.18      73  NEAR FIELD
                A
                A           628.77      64  CONTROL

                B           455.26      39  FAR FIELD
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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

           MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                      MODIFIED INSITU DEVELOPMENT SYSTEM
                              TYPE=UPPER AQUIFER

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: SO4
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=156  MSE=28471.1
HARMONIC MEAN OF CELL SIZES=54.5805

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  AREA

              A             569.92     64  CONTROL

              B             487.36     39  FAR FIELD

              C             337.66     73  NEAR FIELD
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                           RIO BLANCO OIL SHALE COMPANY
                     ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                        MODIFIED INSITU DEVELOPMENT SYSTEM
                               TYPE=UPPER AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN•S MULTIPLE RANGE TEST FOR VARIABLE: PH
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED• ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER•S UNPROTECTED LSD TEST•
ALPHA=0•05  DF=156  MSE=0•155638
HARMONIC MEAN OF CELL SIZES=8•40485

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT•

DUNCAN   GROUPING               MEAN       N  RPTYR

                 A            8•1390      41  1981
                 A
                 A            8•0472      47  1980
                 A
                 A            7•9625       8  1979
                 A
         B       A            7•7750      20  1982
         B
         B                    7•5500       2  1978

                 C            6•8455      11  1976
                 C
                 C            6•7255      47  1975
```

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                         RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                       MODIFIED INSITU DEVELOPMENT SYSTEM
                               TYPE=UPPER AQUIFER

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: ALK
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=156  MSE=92836.1
HARMONIC MEAN OF CELL SIZES=8.40485

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN       N  RPTYR

               A               823.64      11  1976
               A
       B       A               663.17      47  1975
       B       A
       B       A               545.72      47  1980
       B
       B                       491.63       8  1979
       B
       B                       491.24      41  1981
       B
       B                       475.30      20  1982
       B
       B                       372.50       2  1978
```

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                           RIO BLANCO OIL SHALE COMPANY
                      ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

              MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                         MODIFIED INSITU DEVELOPMENT SYSTEM
                                TYPE=UPPER AQUIFER

                           GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: MG
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=156  MSE=988.472
HARMONIC MEAN OF CELL SIZES=8.40485

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  RPTYR

                A            111.00      2  1978
                A
        B       A             97.50     47  1980
        B       A
        B       A             88.63      8  1979
        B       A
        B       A             85.41     41  1981
        B       A
        B       A             81.00     20  1982
        B
        B                     71.17     47  1975
        B
        B                     66.69     11  1976
```

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                                   RIO BLANCO OIL SHALE COMPANY
                            ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

                   MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                                 MODIFIED INSITU DEVELOPMENT SYSTEM
                                         TYPE=UPPER AQUIFER

                                 GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: NA
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=156  MSE=27268
HARMONIC MEAN OF CELL SIZES=8.40485

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN       N  RPTYR

               A               407.73      11  1976
               A
       B       A               323.09      47  1975
       B
       B                       216.50       8  1979
       B
       B                       212.50       2  1978
       B
       B                       199.22      41  1981
       B
       B                       193.83      47  1980
       B
       B                       177.55      20  1982
```

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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                       MODIFIED INSITU DEVELOPMENT SYSTEM
                               TYPE=UPPER AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: F
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=156  MSE=17.7635
HARMONIC MEAN OF CELL SIZES=8.40485

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN      N  RPTYR

                A             4.5636     11  1976
                A
                A             3.6094     47  1975
                A
                A             0.9660     20  1982
                A
                A             0.8500      2  1978
                A
                A             0.6745     47  1980
                A
                A             0.6562      8  1979
                A
                A             0.4049     41  1981
```

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                         RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

             MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                       MODIFIED INSITU DEVELOPMENT SYSTEM
                               TYPE=UPPER AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CL
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=156  MSE=104.205
HARMONIC MEAN OF CELL SIZES=8.40485

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN       N  RPTYR

                 A             21.527      11  1976
                 A
         B       A             16.828      47  1975
         B       A
         B       A             12.483      47  1980
         B       A
         B       A             12.325       8  1979
         B       A
         B       A             12.014      41  1981
         B       A
         B       A             11.110      20  1982
         B
         B                      6.750       2  1978
```

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                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

             MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                        MODIFIED INSITU DEVELOPMENT SYSTEM
                                TYPE=UPPER AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: HCO3
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=156  MSE=117436
HARMONIC MEAN OF CELL SIZES=8.40485

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN       N  RPTYR

                A           941.82      11  1976
                A
        B       A           776.70      47  1975
        B
        B                   581.89      47  1980
        B
        B                   574.63       8  1979
        B
        B                   529.00      20  1982
        B
        B                   502.20      41  1981
        B
        B                   440.00       2  1978
```

```
                          RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

            MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                      MODIFIED INSITU DEVELOPMENT SYSTEM
                              TYPE=UPPER AQUIFER

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: SO4
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=156  MSE=28471.1
HARMONIC MEAN OF CELL SIZES=8.40485

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN       N  RPTYR

                 A            570.00       2  1978
                 A
        B        A            505.25       8  1979
        B        A
        B        A            494.54      41  1981
        B        A
        B        A            489.89      47  1980
        B        A
        B        A            416.30      20  1982
        B        A
        B        A            408.02      47  1975
        B
        B                     376.82      11  1976
```

```
                    RIO BLANCO OIL SHALE COMPANY
             ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

       MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                  MODIFIED INSITU DEVELOPMENT SYSTEM
                         TYPE=UPPER AQUIFER

                    GENERAL LINEAR MODELS PROCEDURE

MANOVA TEST CRITERIA FOR THE HYPOTHESIS OF NO OVERALL RPTYR EFFECT

                      H = TYPE I SS&CP MATRIX FOR: RPTYR
                      E = ERROR SS&CP MATRIX
                      P = DEP. VARIABLES =       11
                      Q = HYPOTHESIS DF  =        6
                      NE= DF OF E        =      156
                      S = MIN(P,Q)       =        6
                      M = .5(ABS(P-Q)-1) =      2.0
                      N = .5(NE-P-1)     =     72.0

   ------------------------------------------------------------

   HOTELLING-LAWLEY TRACE = TR(E**-1*H) =              7.86316315

            F APPROXIMATION = 2(S*N+1)*TR(E**-1*H)/(S*S*(2M+S+1))
                              WITH S(2M+S+1) AND 2(S*N+1) DF

                  F(66,866) =     17.20     PROB > F = 0.0001

   ------------------------------------------------------------

   PILLAI'S TRACE         V = TR(H*INV(H+E)) =         1.45648847

            F APPROXIMATION = (2N+S+1)/(2M+S+1) * V/(S-V)
                              WITH S(2M+S+1) AND S(2N+S+1) DF

                  F(66,906) =      4.40     PROB > F = 0.0001

   ------------------------------------------------------------

   WILKS' CRITERION       L = DET(E)/DET(H+E) =        0.06467311

            W = -(NE-.5(P-Q+1))*LN(L)          =         418.9767
            U = NE-.5(P-G+1)                   =         153.0000
            Z = SQRT((P*P*Q*Q-4)/(P*P+Q*Q-5))  =           5.3508
            B = (P*Q-2)/4                      =          16.0000

            F APPROXIMATION = (U*Z-2B)/(P*Q)*(1-L**1/Z)/L**1/Z
                              WITH P*Q AND U*Z-2B DF

                  F(66,786) =      7.97     PROB > F = 0.0001

   ------------------------------------------------------------
```

```
                  RIO BLANCO OIL SHALE COMPANY
             ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

      MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                 MODIFIED INSITU DEVELOPMENT SYSTEM
                        TYPE=UPPER AQUIFER

                  GENERAL LINEAR MODELS PROCEDURE

MANOVA TEST CRITERIA FOR THE HYPOTHESIS OF NO OVERALL RPTYR EFFECT

   ROY'S MAXIMUM ROOT CRITERION =                       7.14982645

            FIRST CANONICAL VARIABLE YIELDS AN F UPPER BOUND

                  F(6,156) =   185.90     (UPPER BOUND)

   ------------------------------------------------------------
```

```
                   RIO BLANCO OIL SHALE COMPANY
            ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

     MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                MODIFIED INSITU DEVELOPMENT SYSTEM
                        TYPE=UPPER AQUIFER

                 GENERAL LINEAR MODELS PROCEDURE

MANOVA TEST CRITERIA FOR THE HYPOTHESIS OF NO OVERALL AREA EFFECT

                      H = TYPE I SS&CP MATRIX FOR: AREA
                      E = ERROR SS&CP MATRIX
                      P = DEP. VARIABLES  =      11
                      Q = HYPOTHESIS DF   =       2
                      NE= DF OF E         =     156
                      S = MIN(P,Q)        =       2
                      M = .5(ABS(P-Q)-1)  =     4.0
                      N = .5(NE-P-1)      =    72.0

   -------------------------------------------------------------

   HOTELLING-LAWLEY TRACE = TR(E**-1*H) =             4.22434218

            F APPROXIMATION = 2(S*N+1)*TR(E**-1*H)/(S*S*(2M+S+1))
                              WITH S(2M+S+1) AND 2(S*N+1) DF

                  F(22,290) =     27.84     PROB > F = 0.0001

   -------------------------------------------------------------

   PILLAI'S TRACE          V = TR(H*INV(H+E)) =       1.16505354

            F APPROXIMATION = (2N+S+1)/(2M+S+1) * V/(S-V)
                              WITH S(2M+S+1) AND S(2N+S+1) DF

                  F(22,294) =     18.65     PROB > F = 0.0001

   -------------------------------------------------------------

   WILKS' CRITERION        L = DET(E)/DET(H+E) =      0.13414212

            EXACT F = (1-SQRT(L))/SQRT(L)*(NE+Q-P-1)/P
                              WITH 2P AND 2(NE+Q-P-1) DF

                  F(22,292) =     22.97     PROB > F = 0.0001

   -------------------------------------------------------------
```

```
                      RIO BLANCO OIL SHALE COMPANY
                 ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM

        MULTIVARIATE ANALYSIS OF VARIANCE - WATER CHEMISTRY DATA
                     MODIFIED INSITU DEVELOPMENT SYSTEM
                            TYPE=UPPER AQUIFER

                       GENERAL LINEAR MODELS PROCEDURE

     MANOVA TEST CRITERIA FOR THE HYPOTHESIS OF NO OVERALL AREA EFFECT

        ROY'S MAXIMUM ROOT CRITERION =                         3.60576706

              FIRST CANONICAL VARIABLE YIELDS AN F UPPER BOUND

                    F(2,156) =   281.25     (UPPER BOUND)

        ------------------------------------------------------------
```

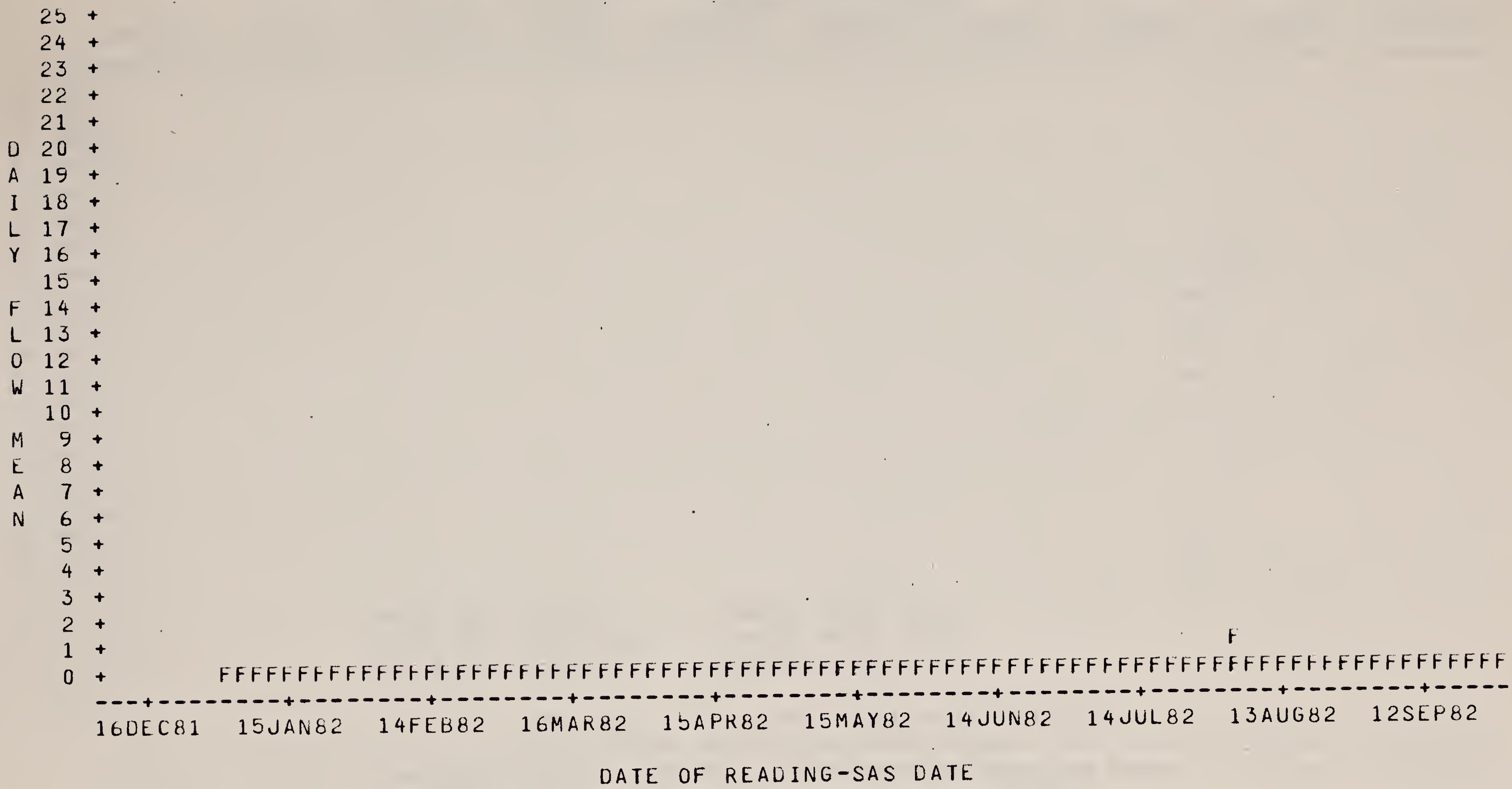
APPENDIX 5-2.1

1982 Water Year USGS Data (Stream Gage Sites)

- o Daily Values Time Series
- o Water Quality Data Listing
- o Duncan's Multiple Range Test Results - Daily Mean Flow and Conductivity

RIO BLANCO OIL SHALE COMPANY
ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
UNITED STATES GEOLOGICAL SURVEY GAUGING STATION DATA
FIELD WATER QUALITY MEASUREMENTS
REPORT YEAR=1982   STATION LOCATION=A-DRY FORK

PLOT OF QM*DATE   SYMBOL USED IS F



NOTE: 190 OBS HIDDEN

```
                    RIO BLANCO OIL SHALE COMPANY
              ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
         UNITED STATES GEOLOGICAL SURVEY GAUGING STATION DATA
                    FIELD WATER QUALITY MEASUREMENTS
           REPORT YEAR=1982   STATION LOCATION=A-DRY FORK

           PLOT OF THI*DATE      SYMBOL USED IS H
           PLOT OF TLOW*DATE     SYMBOL USED IS L
           PLOT OF TM*DATE       SYMBOL USED IS M

D 36 +
A 34 +
I 32 +
L 30 +
Y 28 +
  26 +
H 24 +                                                                           H
I 22 +                                                                            M
G 20 +                                                                            L
H 18 +                                                                           M
  16 +
T 14 +                                                                              M
E 12 +                                                                           L  L
M 10 +
P  8 +
E  6 +
R  4 +
A  2 +
T  0 +
     ---+---------+---------+---------+---------+---------+---------+---------+---------+---------+-----
     16DEC81   15JAN82   14FEB82   16MAR82   15APR82   15MAY82   14JUN82   14JUL82   13AUG82   12SEP82

                              DATE OF READING-SAS DATE

NOTE:    810 OBS HAD MISSING VALUES OR WERE OUT OF RANGE
```

```
                                   RIO BLANCO OIL SHALE COMPANY
                           ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                      UNITED STATES GEOLOGICAL SURVEY GAUGING STATION DATA
                                 FIELD WATER QUALITY MEASUREMENTS
                         REPORT YEAR=1982   STATION LOCATION=A-DRY FORK

                        PLOT OF CHI*DATE      SYMBOL USED IS H
                        PLOT OF CLOW*DATE     SYMBOL USED IS L
                        PLOT OF CM*DATE       SYMBOL USED IS M

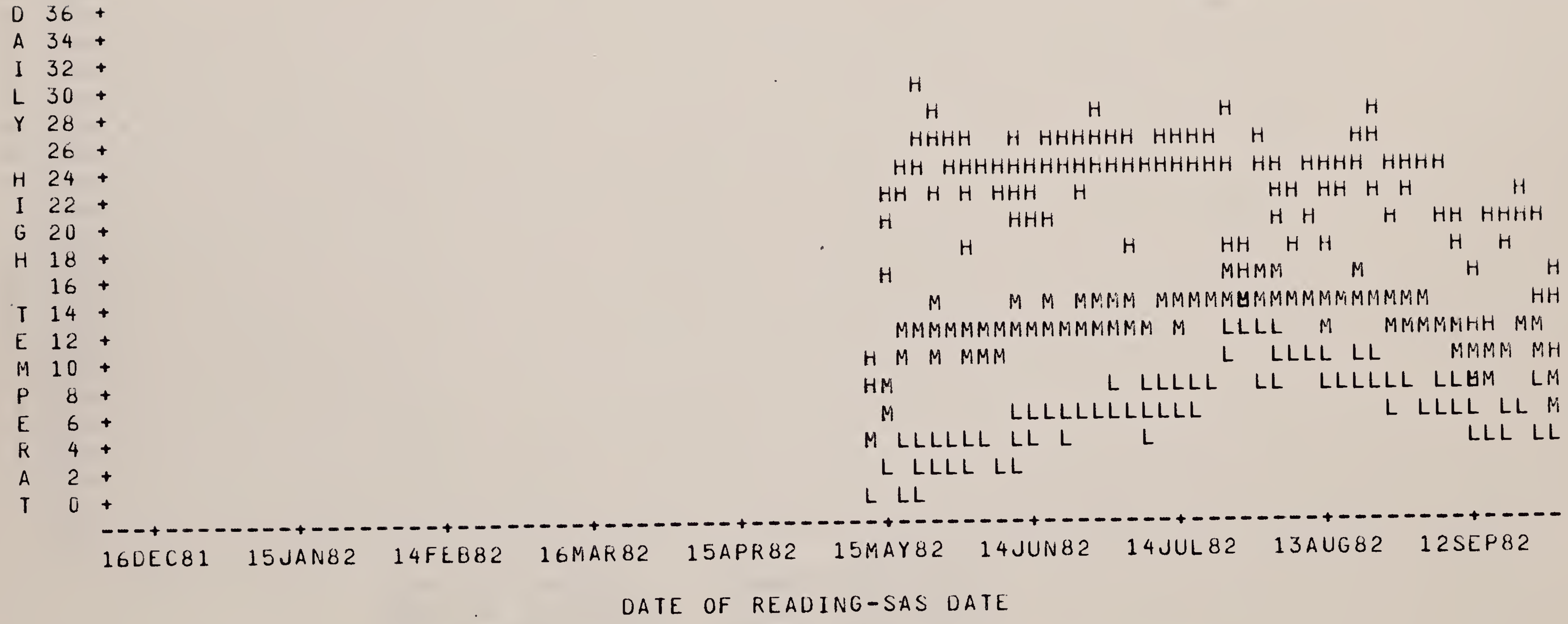
  2500 +
D 2400 +
A 2300 +
I 2200 +
L 2100 +
Y 2000 +
  1900 +
H 1800 +
I 1700 +
G 1600 +
H 1500 +
  1400 +
C 1300 +
O 1200 +
N 1100 +
D 1000 +                                                                             H
U  900 +
C  800 +
T  700 +                                                                         H
I  600 +                                                                         M
V  500 +                                                                         L
I  400 +
T  300 +
Y  200 +
   100 +
     0 +
       -+---------+---------+---------+---------+---------+---------+---------+---------+---------+---------+-----
    16DEC81   15JAN82   14FEB82   16MAR82   15APR82   15MAY82   14JUN82   14JUL82   13AUG82   12SEP82

                                         DATE OF READING-SAS DATE

NOTE:    815 OBS HAD MISSING VALUES OR WERE OUT OF RANGE
```

```
                 RIO BLANCO OIL SHALE COMPANY
           ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
       UNITED STATES GEOLOGICAL SURVEY GAUGING STATION DATA
              FIELD WATER QUALITY MEASUREMENTS
  REPORT YEAR=1982   STATION LOCATION=B-CORRAL GULCH - WEST

      PLOT OF THI*DATE      SYMBOL USED IS H
      PLOT OF TLOW*DATE     SYMBOL USED IS L
      PLOT OF TM*DATE       SYMBOL USED IS M
```



```
NOTE:    395 OBS HAD MISSING VALUES OR WERE OUT OF RANGE    178 OBS HIDDEN
```

```
                                    RIO BLANCO OIL SHALE COMPANY
                             ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                        UNITED STATES GEOLOGICAL SURVEY GAUGING STATION DATA
                                  FIELD WATER QUALITY MEASUREMENTS
                       REPORT YEAR=1982    STATION LOCATION=B-CORRAL GULCH - WEST

                           PLOT OF CHI*DATE        SYMBOL USED IS H
                           PLOT OF CLOW*DATE       SYMBOL USED IS L
                           PLOT OF CM*DATE         SYMBOL USED IS M

  5000 +
D 4800 +
A 4600 +
I 4400 +
L 4200 +
Y 4000 +
  3800 +
H 3600 +
I 3400 +
G 3200 +
H 3000 +
  2800 +
C 2600 +
O 2400 +
N 2200 +
D 2000 +
U 1800 +
C 1600 +
T 1400 +                                                                         H
I 1200 +                                                 MHH H       M M M      HMMMMMMMMMMMH    MHMMM
V 1000 +                                                 MMMMMM      M L LM     MMM LLMLMMLLM    LMLLL
I  800 +                                                      L                                   L
T  600 +
Y  400 +                                                                                          L
   200 +
     0 +
       -+---------+---------+---------+---------+---------+---------+---------+---------+---------+-----
     16DEC81   15JAN82   14FEB82   16MAR82   15APR82   15MAY82   14JUN82   14JUL82   13AUG82   12SEP82

                                       DATE OF READING-SAS DATE

NOTE:    598 OBS HAD MISSING VALUES OR WERE OUT OF RANGE    122 OBS HIDDEN
```

```
                                    RIO BLANCO OIL SHALE COMPANY
                            ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                       UNITED STATES GEOLOGICAL SURVEY GAUGING STATION DATA
                                  FIELD WATER QUALITY MEASUREMENTS
                  REPORT YEAR=1982   STATION LOCATION=C-BOX ELDER GULCH - WEST

                          PLOT OF QM*DATE    SYMBOL USED IS F

  25 +
  24 +
  23 +
  22 +
  21 +
D 20 +
A 19 +
I 18 +
L 17 +
Y 16 +
  15 +
F 14 +
L 13 +
O 12 +
W 11 +
  10 +
M  9 +
E  8 +
A  7 +
N  6 +
   5 +
   4 +
   3 +
   2 +
   1 +                                                 FFFFF F FF
   0 +        FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF    FFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
     ---+---------+---------+---------+---------+---------+---------+---------+---------+---------+------
     16DEC81   15JAN82   14FEB82   16MAR82   15APR82   15MAY82   14JUN82   14JUL82   13AUG82   12SEP82

                                         DATE OF READING-SAS DATE

NOTE:    188 OBS HIDDEN
```

```
                                 RIO BLANCO OIL SHALE COMPANY
                          ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     UNITED STATES GEOLOGICAL SURVEY GAUGING STATION DATA
                               FIELD WATER QUALITY MEASUREMENTS
                 REPORT YEAR=1982   STATION LOCATION=C-BOX ELDER GULCH - WEST

                       PLOT OF THI*DATE     SYMBOL USED IS H
                       PLOT OF TLOW*DATE    SYMBOL USED IS L
                       PLOT OF TM*DATE      SYMBOL USED IS M

D 36 +
A 34 +
I 32 +
L 30 +                                                       H  H
Y 28 +                                                       H  HH
  26 +                                                 HH HHH H  H
H 24 +                                                 HHHHHHHHHH H
I 22 +                                           H     H H H H   H
G 20 +                                           H    HH  H
H 18 +                                            HH  H H                                  H
  16 +                                          H H H H   H                                L
T 14 +                                        H    H H  MM   M MMM                            H
E 12 +                                           MH    MMMMMMMMMM
M 10 +                                           M MH MMMMM M ML MM                           M
P  8 +                                          MMMMMMM        LLL                       H    L
E  6 +                                        M  LMMMM L LL  LLLLLL                      M
R  4 +                                        H  LLLMLLLL LL LL L
A  2 +                                        M LL  LLLL LL LL
T  0 +                                        L   LLL       L
     ---+--------+--------+--------+--------+--------+--------+--------+--------+--------+-----
     16DEC81  15JAN82  14FEB82  16MAR82  15APR82  15MAY82  14JUN82  14JUL82  13AUG82  12SEP82

                                     DATE OF READING-SAS DATE

NOTE:    628 OBS HAD MISSING VALUES OR WERE OUT OF RANGE     49 OBS HIDDEN
```

```
                                    RIO BLANCO OIL SHALE COMPANY
                            ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                       UNITED STATES GEOLOGICAL SURVEY GAUGING STATION DATA
                                  FIELD WATER QUALITY MEASUREMENTS
                  REPORT YEAR=1982   STATION LOCATION=C-BOX ELDER GULCH - WEST

                         PLOT OF CHI*DATE       SYMBOL USED IS H
                         PLOT OF CLOW*DATE      SYMBOL USED IS L
                         PLOT OF CM*DATE        SYMBOL USED IS M

  2500 +
D 2400 +
A 2300 +
I 2200 +
L 2100 +
Y 2000 +
  1900 +
H 1800 +
I 1700 +
G 1600 +
H 1500 +
  1400 +
C 1300 +
O 1200 +
N 1100 +
D 1000 +
U  900 +                                             HH                 H
C  800 +                                          M MMMM    MMM        MM
T  700 +                                          L LLLM    M L        L                          H
I  600 +                                             L                                              H  H
V  500 +                                          L                                               M    M
I  400 +                                                                                            L  L
T  300 +                                                                                          L
Y  200 +
   100 +
     0 +
       -+---------+---------+---------+---------+---------+---------+---------+---------+---------+-----
     16DEC81   15JAN82   14FEB82   16MAR82   15APR82   15MAY82   14JUN82   14JUL82   13AUG82   12SEP82

                                         DATE OF READING-SAS DATE

NOTE:     750 OBS HAD MISSING VALUES OR WERE OUT OF RANGE      20 OBS HIDDEN
```

```
                                 RIO BLANCO OIL SHALE COMPANY
                          ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     UNITED STATES GEOLOGICAL SURVEY GAUGING STATION DATA
                               FIELD WATER QUALITY MEASUREMENTS
                   REPORT YEAR=1982   STATION LOCATION=D-CORRAL GULCH - EAST

                       PLOT OF THI*DATE     SYMBOL USED IS H
                       PLOT OF TLOW*DATE    SYMBOL USED IS L
                       PLOT OF TM*DATE      SYMBOL USED IS M

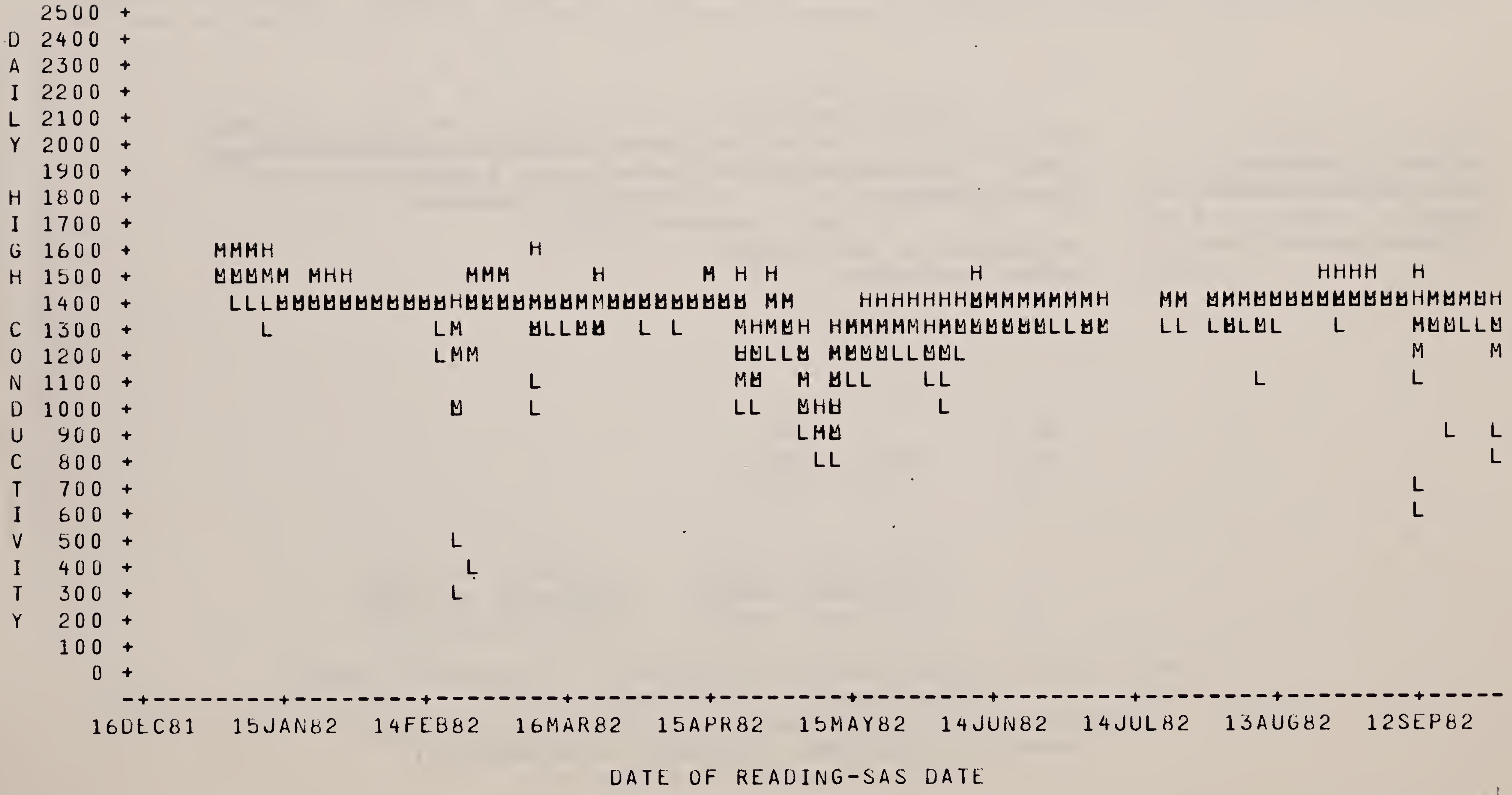
D 36 +
A 34 +
I 32 +
L 30 +
Y 28 +
  26 +
H 24 +
I 22 +
G 20 +                                                 HH H
H 18 +                                          H     HHHHHHHH HHHHHHH   HH H
  16 +                                        HHHHHH HHH HH HHHHHH HH    H  HHHHHHHHHHHHHHHHHH
T 14 +                            H HHHHH HHHHHHH  HHH              H    MM M H  H HHH  H HHHHH
E 12 +                    HHHHHHHHHHHHHHHHHH HH   H H  MMMMMMMMMMMMMMM   ML MMMMHMMMMMMMMHHMMMH
M 10 +       H  HHHHHHHHHHMHHHMM HM HMMMMMMMMMMMMMMMMMMMM MMM  LLLLLL    LL LLLMMMMLMMLLLMMMLMM
P  8 +       MMMMMMMMMMMMMMMMMMMMMMMMMLMMMMLLMMLLLMLM  LLLLL LLLLLLLLL        L LLLLLL L LLLLLL
E  6 +       LMMLLLL L LLL LM  L LLLLL LL L   LLLLLLMLLLLLLLLL                  L    L   L    L
R  4 +                       L                    LLLL
A  2 +                      L    L
T  0 +
     ---+--------+--------+--------+--------+--------+--------+--------+--------+--------+------
     16DEC81  15JAN82  14FEB82  16MAR82  15APR82  15MAY82  14JUN82  14JUL82  13AUG82  12SEP82

                                     DATE OF READING-SAS DATE

NOTE:     54 OBS HAD MISSING VALUES OR WERE OUT OF RANGE    377 OBS HIDDEN
```

```
                    RIO BLANCO OIL SHALE COMPANY
              ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
         UNITED STATES GEOLOGICAL SURVEY GAUGING STATION DATA
                    FIELD WATER QUALITY MEASUREMENTS
        REPORT YEAR=1982   STATION LOCATION=D-CORRAL GULCH - EAST

              PLOT OF CHI*DATE      SYMBOL USED IS H
              PLOT OF CLOW*DATE     SYMBOL USED IS L
              PLOT OF CM*DATE       SYMBOL USED IS M
```



```
NOTE:     58 OBS HAD MISSING VALUES OR WERE OUT OF RANGE    409 OBS HIDDEN
```

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                                          RIO BLANCO OIL SHALE COMPANY
                                  ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                             UNITED STATES GEOLOGICAL SURVEY GAUGING STATION DATA
                                        FIELD WATER QUALITY MEASUREMENTS
                            REPORT YEAR=1982   STATION LOCATION=E-RINKY DINK GULCH

                                PLOT OF QM*DATE    SYMBOL USED IS F

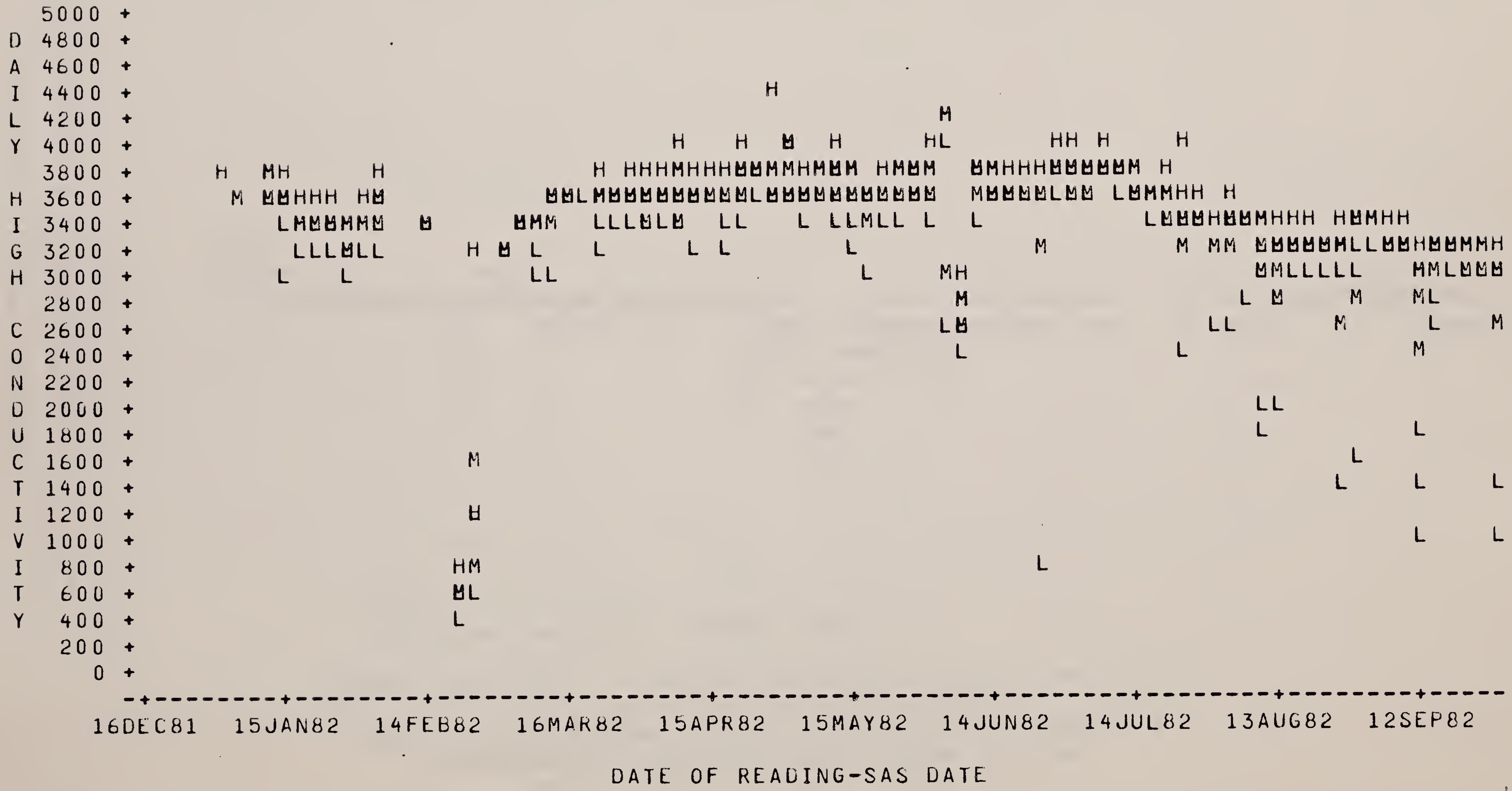
  25 +
  24 +
  23 +
  22 +
  21 +
D 20 +
A 19 +
I 18 +
L 17 +
Y 16 +
  15 +
F 14 +
L 13 +
O 12 +
W 11 +
  10 +
M  9 +
E  8 +
A  7 +
N  6 +
   5 +
   4 +
   3 +
   2 +
   1 +
   0 +        FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
     ---+---------+---------+---------+---------+---------+---------+---------+---------+---------+-----
     16DEC81   15JAN82   14FEB82   16MAR82   15APR82   15MAY82   14JUN82   14JUL82   13AUG82   12SEP82

                                           DATE OF READING-SAS DATE

NOTE:     191 OBS HIDDEN
```

RIO BLANCO OIL SHALE COMPANY
ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
UNITED STATES GEOLOGICAL SURVEY GAUGING STATION DATA
FIELD WATER QUALITY MEASUREMENTS
REPORT YEAR=1982   STATION LOCATION=F-LOWER YELLOW CREEK

PLOT OF CHI*DATE   SYMBOL USED IS H
PLOT OF CLOW*DATE   SYMBOL USED IS L
PLOT OF CM*DATE   SYMBOL USED IS M



NOTE: 152 OBS HAD MISSING VALUES OR WERE OUT OF RANGE   292 OBS HIDDEN

```
                                 RIO BLANCO OIL SHALE COMPANY
                          ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     UNITED STATES GEOLOGICAL SURVEY GAUGING STATION DATA
                               FIELD WATER QUALITY MEASUREMENTS
                   REPORT YEAR=1982   STATION LOCATION=F-LOWER YELLOW CREEK

                       PLOT OF THI*DATE     SYMBOL USED IS H
                       PLOT OF TLOW*DATE    SYMBOL USED IS L
                       PLOT OF TM*DATE      SYMBOL USED IS M

D 36 +
A 34 +
I 32 +                                                                  H  HHHH H   H
L 30 +                                                         H HHHHHH HHHHHHHH HH HH
Y 28 +                                                   HH HH HH HH  HHHHH H HH HHH  H H
  26 +                                                  HHHHHHHHHHHHHH    H      H    HHHHH
H 24 +                                           HH    HH  H HHHH            H           HH  HH
I 22 +                                       HH HHHHHH H    H         H    MMMMMM HMMMHH  H HH H
G 20 +                                           HHHHHH          M MM   MMMM MMM MMMM M    HHH H
H 18 +                                  H H  HHHH  HH     M H  M MMMMMMM M   L LH M   MMMMM
  16 +                                 H HHHHH H    M H  MM  M  M  M   M   LLLLLMLLLLLM MMMH MMMH
T 14 +                                 HH HHH   H       MMMMMMMMM    LLLLLLLL L LLLLLLLL L MM  HH
E 12 +                             H       HH   H MMMM M    M    LL  L MLLLL  LLL     LLL LHML MM
M 10 +                          H HH     HH  MM  MMMM M      L  LLLLLLL L L             LL MMLL M
P  8 +                         HHHH H  MMM    MMM  L  M  L LL  LLLLL LLL                    LL LL
E  6 +                         H   M   MMHMMMM MM LLLLMLLLLLLLL                               L L
R  4 +                HHH      MMMMMM  ML   ML MML L  LL LL   LL
A  2 +               HMMHH    HM LL L   LM   L   LLLLL
T  0 +         M  HHMHLMMHMM  MLLLLL   L   L  L L              L
     ---+---------+---------+---------+---------+---------+---------+---------+---------+---------+------
     16DEC81   15JAN82   14FEB82   16MAR82   15APR82   15MAY82   14JUN82   14JUL82   13AUG82   12SEP82

                                      DATE OF READING-SAS DATE

NOTE:    151 OBS HAD MISSING VALUES OR WERE OUT OF RANGE    233 OBS HIDDEN
```

```
                                 RIO BLANCO OIL SHALE COMPANY
                          ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                     UNITED STATES GEOLOGICAL SURVEY GAUGING STATION DATA
                               FIELD WATER QUALITY MEASUREMENTS
                   REPORT YEAR=1982   STATION LOCATION=F-LOWER YELLOW CREEK

                        PLOT OF QM*DATE    SYMBOL USED IS F

  100 +
   95 +
   90 +
D  85 +
A  80 +
I  75 +
L  70 +
Y  65 +
   60 +
F  55 +                     F
L  50 +                     F
O  45 +                      F
W  40 +
   35 +
M  30 +                     F
E  25 +
A  20 +                    FF
N  15 +                    F
   10 +
    5 +           F    FF    F                      FF                              F    FF   F
    0 +      FFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFF
      --+--------+--------+--------+--------+--------+--------+--------+--------+--------+-----
     16DEC81  15JAN82  14FEB82  16MAR82  15APR82  15MAY82  14JUN82  14JUL82  13AUG82  12SEP82

                                      DATE OF READING-SAS DATE

NOTE:    176 OBS HIDDEN
```

```
RIO BLANCO OIL SHALE COMPANY
ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
UNITED STATES GEOLOGICAL SURVEY GAUGING STATIONS
WATER CHEMISTRY DATA

REPORT YEAR=1982   STAT=F-LOWER YELLOW CREEK

                     S                                                N N  K  K T
           T    T    P                           0 0     T          T 0 0  J  J N N
           U    U C  _                           I I N N 0  0   N   N 2 3  E  E 0 0   0 T
      D    R    R 0  C                       H   L L _ _ R  R   H   H _ _  L  L 2 2 T _ 0
0     A    B    B L  0        B C     C  A   C C 5 5 T D G  G   3   3 D D  6  6 N N P P T
B     T    7    7 0  N    D   0 0  P  0  L   0 0 5 5 0 I _  _   _   _ I I  2  2 0 0 0 0 _
S     E    0    6 R  D    0   D D  H  2  K   3 3 0 6 T S N  N   N   N S S  3  5 3 3 4 4 P

14 17FEB82 .    . . 2600 11.3 . 8 8.5 . 1480 . . . . . . .  .   .   . . .  .  . . . . . .
15 22FEB82 . 4800 .  460 10.5 . . 8.2 .  200 . . . 0 . . . 1.7 0.25 . . . 1.9 . . . . . .
16 22SEP82 .    . . 3200 11.6 . 8 8.8 . 1210 . . . . . . .  .   .   . . .  .  . . . . . .

        D        S   C             N
        0        U   Y          T  C                 P
    D   R        S   A          _  _                 E
    I   T        P   N          H  H                 R  N                    S
0   S   H T  D   _   I    T     A  A             S   _  A            S       I
B   _   0 0  0   0   D    H  H  R  R C   M   N   A   N  _         C  0       0   A B B B
S   P   P C  C   C   E    S  S  D  D A   G   A   R   A  K  K      L  4   F   2   S A E I

14  .   . . 14.0 .   .    .  . 540 0 35 110 550 10.0 69 . 4.6  84.0 520 1.7 15.0 . . . .
15 0.17 . . 12.0 . -0.01 0.5 .  73 0 11  11  89  5.2 71 . 5.0   9.1  75 0.3  6.6 3 . . .
16  .   . .  7.1 .   .    .  . 470 . 30  97 670 13.0  . . 3.2 120.0 490 0.3  9.2 . . . .

                                                T  F  P
                                                _  _  H
                                             0  C  C  E          T  T                   F
0                  M                         D  0  0  N P  T     D  D   N N N           L
B      C C C F P M 0 N A   Z S A G G L S T Z 0  L  L  0 C  D     S  S   H 0 0 B H S     0
S   B  D R U E B N L I G V N N L A E I E I R R  I  I  L B  S     2  3   3 3 2 R G R     W

14 740 . . . . . . . . . . . . . . . . 1 . . . 130 81 . . 1990  15 2.70 . . . . . .   2.8
15  90 . . . . . . . . . . . . . . . . 1 . . .   .  . 5 0  327 108 0.44 . . . . . . 122.0
16 870 . . . . . . . . . . . . . . . . . . . .   .  . . . 2150   . 2.90 . . . . . .   2.0
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RIO BLANCO OIL SHALE COMPANY
ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
UNITED STATES GEOLOGICAL SURVEY GAUGING STATIONS
WATER CHEMISTRY DATA

REPORT YEAR=1982   STAT=E-RINKY DINK GULCH

                S                                     N N K K T           D     S C        N
          T T   P                     O O     T     T O O J J N N         O     U Y     T  C
          U U C _                     I I N N O O N N 2 3 E E 0 0   O T D R     S A     _  _
     D    R R O C                 H   L L _ _ R R H H _ _ L L 2 2 T _ O I T     P N     H  H
O    A    B B L O    B C     C A  C C 5 5 T D G G 3 3 D D 6 6 N N P P T S H T D _ I T   A  A
B    T    7 7 O N  D O O  P  O L  O O 5 5 O I _ _ _ _ I I 2 2 0 0 0 0 _ _ 0 0 0 O D H H R  R C   M   N
S    E    0 6 R D  O D D  H  2 K  3 3 0 6 T S N N N N S S 3 5 3 3 4 4 P P P C C C E S S D  D A   G   A

5 22FEB82 . . . 85 . . 7 7.6 . 47 . . . . . . . . . . . . . . . . . . . . . . . . . . . 40 0 13 1.9 3.6

      P                                                                     T F P
      E                                                                     _ _ H
      R  N             S                                                  O C C E      T T
O  S  _  A         S   I                        M                         D O O N P T  D D N N N
B  A  N  _      C  O   O A B B B    C C C F P M O N A   Z S A G G L S T Z O L L O C D  S S H O O B H S
S  R  A  K  K   L  4 F 2 S A E I B  D R U E B N L I G V N N L A E I E I R R I I L B S  2 3 3 3 2 R G R

5 0.3 15 . 3.3 1.4 7 0 3 . . . . 10 . . . . . . . . . . . . . . . . . . . . . . . . 61 . . . . . . . .
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                    RIO BLANCO OIL SHALE COMPANY
              ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
           UNITED STATES GEOLOGICAL SURVEY GAUGING STATIONS
                     FIELD WATER QUALITY (FWQ) DATA
                      TWO-WAY ANALYSIS OF VARIANCE
                 STATION LOCATION=B-CORRAL GULCH - WEST

                     GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: QM
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=2732  MSE=0.070231
HARMONIC MEAN OF CELL SIZES=258.798

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING            MEAN       N  RPTYR

                A          0.35591    274  1979

                B          0.26359    298  1974
                B
                B          0.25311    273  1982
                B
        C       B          0.23396     96  1980
        C
        C       D          0.19770    365  1978
                D
                D          0.17964    365  1975
                D
                D          0.17244    365  1981

                E          0.09404    366  1976

                F          0.04096    365  1977
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                            RIO BLANCO OIL SHALE COMPANY
                     ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                  UNITED STATES GEOLOGICAL SURVEY GAUGING STATIONS
                           FIELD WATER QUALITY (FWQ) DATA
                            TWO-WAY ANALYSIS OF VARIANCE
                      STATION LOCATION=C-BOX ELDER GULCH - WEST

                           GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: QM
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=2729  MSE=0.216979
HARMONIC MEAN OF CELL SIZES=257.886

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  RPTYR

               A            0.47579    273  1979

               B            0.31474    365  1978
               B
               B            0.25296    365  1975
               B
               B            0.25138    298  1974

               C            0.11147    273  1982
               C
       D       C            0.04956    366  1976
       D       C
       D       C            0.03726    365  1981
       D
       D                    0.00779     95  1980
       D
       D                    0.00704    365  1977
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                            RIO BLANCO OIL SHALE COMPANY
                     ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                  UNITED STATES GEOLOGICAL SURVEY GAUGING STATIONS
                           FIELD WATER QUALITY (FWQ) DATA
                            TWO-WAY ANALYSIS OF VARIANCE
                       STATION LOCATION=D-CORRAL GULCH - EAST

                           GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: QM
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=2738  MSE=0.488455
HARMONIC MEAN OF CELL SIZES=262.896

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN        N  RPTYR

               A             3.6523      276  1979

               B             2.4379      365  1978

               C             0.9399      365  1981
               C
               C             0.8917      365  1975
               C
       D       C             0.8522      101  1980
       D
       D       E             0.7586      273  1982
               E
       F       E             0.6629      298  1974
       F
       F                     0.5427      366  1976

               G             0.3361      365  1977
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                                   RIO BLANCO OIL SHALE COMPANY
                           ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                        UNITED STATES GEOLOGICAL SURVEY GAUGING STATIONS
                                  FIELD WATER QUALITY (FWQ) DATA
                                   TWO-WAY ANALYSIS OF VARIANCE
                              STATION LOCATION=F-LOWER YELLOW CREEK

                                  GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: QM
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=3251  MSE=81.5118
HARMONIC MEAN OF CELL SIZES=21.9073

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN       N  RPTYR

                A           2.4857     273  1982
                A
                A           2.4600      95  1980
                A
                A           2.4321     365  1974
                A
                A           2.1905     365  1978
                A
                A           1.7473     365  1973
                A
                A           1.7213     274  1979
                A
                A           1.6716     365  1981
                A
                A           1.4921     365  1975
                A
                A           1.4763     366  1976
                A
                A           1.1225     365  1977
                A
                A           0.8195      93  1972
                A
                A           0.0000       2  1965
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                            RIO BLANCO OIL SHALE COMPANY
                     ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                  UNITED STATES GEOLOGICAL SURVEY GAUGING STATIONS
                           FIELD WATER QUALITY (FWQ) DATA
                            TWO-WAY ANALYSIS OF VARIANCE
                       STATION LOCATION=B-CORRAL GULCH - WEST

                           GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CM
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=888  MSE=29375.2
HARMONIC MEAN OF CELL SIZES=43.1985

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN      N  RPTYR

               A             1153.9     92  1980
               A
               A             1115.4     97  1981
               A
       B       A             1095.0     73  1982
       B
       B       C             1030.9    162  1979
       B       C
       B       C             1020.2    131  1975
               C
       D       C             1007.0    180  1978
       D
       D       E              938.1    168  1976
               E
               E              894.1      8  1977
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                              RIO BLANCO OIL SHALE COMPANY
                         ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                      UNITED STATES GEOLOGICAL SURVEY GAUGING STATIONS
                              FIELD WATER QUALITY (FWQ) DATA
                               TWO-WAY ANALYSIS OF VARIANCE
                          STATION LOCATION=C-BOX ELDER GULCH - WEST

                              GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CM
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=296  MSE=17655.3
HARMONIC MEAN OF CELL SIZES=5.37891

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  RPTYR

                  A         8630.0      1  1981

                  B          758.2     65  1979
                  B
                  B          758.1     66  1975
                  B
                  B          754.6     23  1982
                  B
          C       B          631.6     89  1978
          C
          C                  519.5     62  1976

                  D          185.2      5  1977
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                              RIO BLANCO OIL SHALE COMPANY
                        ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                  UNITED STATES GEOLOGICAL SURVEY GAUGING STATIONS
                             FIELD WATER QUALITY (FWQ) DATA
                              TWO-WAY ANALYSIS OF VARIANCE
                        STATION LOCATION=D-CORRAL GULCH - EAST

                             GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CM
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=1971  MSE=10404.6
HARMONIC MEAN OF CELL SIZES=206.544

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN       N  RPTYR

                A             1454.6     338  1981
                A
                A             1453.2      83  1980

                B             1367.6     253  1982

                C             1318.1     264  1979

                D             1249.9     189  1975

                E             1226.2     330  1978
                E
                E             1207.2     218  1976

                F             1150.8     325  1977
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                         RIO BLANCO OIL SHALE COMPANY
                   ENVIRONMENTAL HYDROLOGY MONITORING PROGRAM
                UNITED STATES GEOLOGICAL SURVEY GAUGING STATIONS
                         FIELD WATER QUALITY (FWQ) DATA
                          TWO-WAY ANALYSIS OF VARIANCE
                    STATION LOCATION=F-LOWER YELLOW CREEK

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CM
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=1801  MSE=221695
HARMONIC MEAN OF CELL SIZES=161.981

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING            MEAN       N  RPTYR

                A           3930.7    291  1978

                B           3766.7    294  1977

                C           3468.3    195  1976
                C
                C           3429.1    213  1975
                C
                C           3414.0    223  1982
                C
                C           3398.7    308  1981

                D           3235.3    140  1979

                E           2992.0     92  1980

                F           2796.3     76  1974
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APPENDIX 6-0

Special Studies/Ecological Interrelationships

APPENDIX 6-1

Experimental Revegetation Data and Analyses

APPENDIX 6-1.1

Plot R-1 Experimental Revegetation Data

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	4	0	0	4	2.0
MELILOTUS OFFICINALIS	14	24	28	28	23.5
SUBTOTAL					25.5
FORB - INVADED					
ASTRAGALUS PURSHII	1	0	0	1	0.5
CHAENACTIS DOUGLASII	1	1	0	0	0.5
CRYPTANTHA SERICEA	0	0	0	4	1.0
IPOMOPSIS AGGREGATA	0	2	1	1	1.0
SUBTOTAL					3.0
GRASS - PLANTED					
AGROPYRON SPECIES	19	13	16	9	14.3
AGROPYRON TRICHOPHORUM	1	4	3	3	2.8
STIPA VIRIDULA	3	0	1	0	1.0
SUBTOTAL					18.0
GRASS - INVADED					
STIPA COMATA	0	0	0	3	0.8
SUBTOTAL					0.8
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	1	0	0	0	0.3
CERATOIDES LANATA	2	0	0	0	0.5
CHRYSOTHAMNUS NAUSEOSUS	0	2	0	0	0.5
SUBTOTAL					1.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	3	1	1	0	1.3
SUBTOTAL					1.3
TOTAL PLANTED SPECIES					44.8
TOTAL INVADED SPECIES					5.0
GRAND TOTAL					49.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
LINUM LEWISII	3	11	24	17	13.8
MELILOTUS OFFICINALIS	11	0	0	9	5.0
SUBTOTAL					18.8
FORB - INVADED					
ASTRAGALUS PURSHII	0	0	0	1	0.3
CHAENACTIS DOUGLASII	1	0	1	1	0.8
IPOMOPSIS AGGREGATA	12	0	0	0	3.0
PHLOX HOODII	0	0	1	0	0.3
PHYSARIA FLORIBUNDA	0	0	1	0	0.3
UNKNOWN FORB	1	0	0	0	0.3
SUBTOTAL					4.8
GRASS - PLANTED					
AGROPYRON SPECIES	12	21	14	7	13.5
AGROPYRON TRICHOPHORUM	4	1	2	4	2.8
ELYMUS CINEREUS	2	0	0	0	0.5
ORYZOPSIS HYMENOIDES	0	0	0	2	0.5
STIPA VIRIDULA	0	2	3	0	1.3
SUBTOTAL					18.5
GRASS - INVADED					
BROMUS TECTORUM	0	0	0	2	0.5
SITANION HYSTRIX	0	0	0	5	1.3
STIPA COMATA	1	0	0	8	2.3
SUBTOTAL					4.0
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	2	0	1	0.8
ATRIPLEX CANESCENS	3	3	0	0	1.5
CERATOIDES LANATA	0	1	0	5	1.5
CHRYSOTHAMNUS NAUSEOSUS	0	4	0	1	1.3
SUBTOTAL					5.0
TOTAL PLANTED SPECIES					42.3
TOTAL INVADED SPECIES					8.8
GRAND TOTAL					51.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS				TREATMENT PLOT
	#5	#6	#7	#8	AVERAGE
FORB - PLANTED					
MELILOTUS OFFICINALIS	15	11	0	4	7.5
SPHAERALCEA COCCINEA	1	0	1	0	0.5
SUBTOTAL					8.0
FORB - INVADED					
ASTRAGALUS PURSHII	0	0	1	1	0.5
CHAENACTIS DOUGLASII	1	0	0	1	0.5
CRYPTANTHA SERICEA	2	0	0	0	0.5
HAPLOPAPPUS NUTTALLII	0	2	0	0	0.5
MACHAERANTHERA SPECIES	2	1	1	1	1.3
SENECIO MULTILOBATUS	1	1	0	0	0.5
SUBTOTAL					3.8
GRASS - PLANTED					
AGROPYRON SPECIES	22	4	9	16	12.8
AGROPYRON TRICHOPHORUM	1	3	3	1	2.0
ORYZOPSIS HYMENOIDES	0	1	9	1	2.8
SUBTOTAL					17.5
GRASS - INVADED					
AGROPYRON CRISTATUM	0	15	3	0	4.5
BROMUS TECTORUM	0	1	14	0	3.8
SITANION HYSTRIX	0	0	2	0	0.5
SUBTOTAL					8.8
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	0	2	0.5
CERATOIDES LANATA	1	1	1	0	0.8
CHRYSOTHAMNUS NAUSEOSUS	1	5	0	0	1.5
SUBTOTAL					2.8
TOTAL PLANTED SPECIES					28.3
TOTAL INVADED SPECIES					12.5
GRAND TOTAL					40.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
MELILOTUS OFFICINALIS	13	18	17	28	19.0
SPHAERALCEA COCCINEA	1	0	0	0	0.3
SUBTOTAL					19.3
FORB - INVADED					
SENECIO MULTILOBATUS	0	1	0	0	0.3
UNKNOWN FORB	1	0	0	0	0.3
SUBTOTAL					0.5
GRASS - PLANTED					
AGROPYRON SPECIES	8	4	14	16	10.5
AGROPYRON TRICHOPHORUM	13	1	3	5	5.5
ORYZOPSIS HYMENOIDES	0	0	2	0	0.5
STIPA VIRIDULA	3	2	0	2	1.8
SUBTOTAL					18.3
GRASS - INVADED					
BROMUS TECTORUM	0	19	0	0	4.8
KOELERIA MACRANTHA	0	1	2	0	0.8
SITANION HYSTRIX	0	11	6	1	4.5
STIPA COMATA	0	1	0	0	0.3
SUBTOTAL					10.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	1	1	1	0	0.8
CERATOIDES LANATA	0	0	1	2	0.8
CHRYSOTHAMNUS NAUSEOSUS	0	0	1	0	0.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	5	1	0	1.5
SUBTOTAL					3.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	2	0	0.5
SUBTOTAL					0.5
TOTAL PLANTED SPECIES					40.8
TOTAL INVADED SPECIES					11.3
GRAND TOTAL					52.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	16	0	14	0	7.5
LINUM LEWISII	2	3	9	14	7.0
MELILOTUS OFFICINALIS	0	8	25	29	15.5
SUBTOTAL					30.0
FORB - INVADED					
IPOMOPSIS AGGREGATA	0	1	0	1	0.5
SUBTOTAL					0.5
GRASS - PLANTED					
AGROPYRON SPECIES	11	21	12	9	13.3
AGROPYRON TRICHOPHORUM	7	4	2	3	4.0
STIPA VIRIDULA	1	0	0	0	0.3
SUBTOTAL					17.5
GRASS - INVADED					
AGROPYRON CRISTATUM	0	7	0	0	1.8
BROMUS TECTORUM	0	0	0	2	0.5
SUBTOTAL					2.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	1	1	1	0.8
CERATOIDES LANATA	7	1	0	2	2.5
CHRYSOTHAMNUS NAUSEOSUS	2	13	6	0	5.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	1	0	0	0.3
SUBTOTAL					8.8
TOTAL PLANTED SPECIES					56.3
TOTAL INVADED SPECIES					2.8
GRAND TOTAL					59.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	11	0	2	4	4.3
LINUM LEWISII	9	1	1	2	3.3
MELILOTUS OFFICINALIS	7	25	9	12	13.3
SUBTOTAL					20.8
FORB - INVADED					
ASTRAGALUS PURSHII	0	0	0	1	0.3
CHAENACTIS DOUGLASII	0	1	0	0	0.3
CREPIS OCCIDENTALIS	1	0	0	0	0.3
HAPLOPAPPUS NUTTALLII	3	1	0	0	1.0
IPOMOPSIS AGGREGATA	0	1	1	0	0.5
PHYSARIA FLORIBUNDA	0	1	0	1	0.5
SENECIO MULTILOBATUS	0	0	1	0	0.3
SUBTOTAL					3.0
GRASS - PLANTED					
AGROPYRON SPECIES	14	9	16	23	15.5
AGROPYRON TRICHOPHORUM	3	1	14	5	5.8
SUBTOTAL					21.3
GRASS - INVADED					
BROMUS TECTORUM	0	0	0	1	0.3
SUBTOTAL					0.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	15	0	0	3.8
ATRIPLEX CANESCENS	0	0	0	4	1.0
CERATOIDES LANATA	0	0	3	0	0.8
CHRYSOTHAMNUS NAUSEOSUS	6	0	2	1	2.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	1	0	0	0.3
SUBTOTAL					8.0
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	1	2	0.8
SUBTOTAL					0.8
TOTAL PLANTED SPECIES					50.0
TOTAL INVADED SPECIES					4.0
GRAND TOTAL					54.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
LINUM LEWISII	0	7	6	0	3.3
MELILOTUS OFFICINALIS	0	9	0	31	10.0
SPHAERALCEA COCCINEA	0	0	0	1	0.3
SUBTOTAL					13.5
FORB - INVADED					
ASTRAGALUS PURSHII	0	0	1	0	0.3
LUPINUS SPECIES	0	0	1	0	0.3
MACHAERANTHERA SPECIES	0	1	1	0	0.5
PHYSARIA FLORIBUNDA	0	0	1	0	0.3
UNKNOWN FORB	1	0	0	0	0.3
SUBTOTAL					1.5
GRASS - PLANTED					
AGROPYRON SPECIES	26	19	27	13	21.3
AGROPYRON TRICHOPHORUM	3	2	4	4	3.3
STIPA VIRIDULA	1	3	0	3	1.8
SUBTOTAL					26.3
GRASS - INVADED					
BROMUS TECTORUM	0	0	1	0	0.3
SUBTOTAL					0.3
SHRUB - PLANTED					
CERATOIDES LANATA	6	3	1	1	2.8
CHRYSOTHAMNUS NAUSEOSUS	3	0	5	0	2.0
CHRYSOTHAMNUS VISCIDIFLORUS	2	0	0	0	0.5
PURSHIA TRIDENTATA	4	0	0	0	1.0
SUBTOTAL					6.3
TOTAL PLANTED SPECIES					46.0
TOTAL INVADED SPECIES					1.8
GRAND TOTAL					47.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	3	0	0	0.8
LINUM LEWISII	0	3	0	1	1.0
MELILOTUS OFFICINALIS	0	11	0	7	4.5
SUBTOTAL					6.3
FORB - INVADED					
ASTRAGALUS PURSHII	1	0	0	0	0.3
ASTER SPECIES	0	1	1	0	0.5
IPOMOPSIS AGGREGATA	1	0	0	1	0.5
PENSTEMON FREMONTII	0	0	0	2	0.5
UNKNOWN FORB	0	1	0	0	0.3
SUBTOTAL					2.0
GRASS - PLANTED					
AGROPYRON SPECIES	21	14	21	21	19.3
AGROPYRON TRICHOPHORUM	6	13	8	9	9.0
ORYZOPSIS HYMENOIDES	0	0	1	0	0.3
STIPA VIRIDULA	3	1	0	0	1.0
SUBTOTAL					29.5
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	0	1	0.3
ATRIPLEX CANESCENS	3	0	0	0	0.8
CERATOIDES LANATA	3	4	3	0	2.5
PURSHIA TRIDENTATA	0	0	0	1	0.3
SUBTOTAL					3.8
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	1	0	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					39.5
TOTAL INVADED SPECIES					2.3
GRAND TOTAL					41.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	10	0	1	0	2.8
LINUM LEWISII	3	0	9	0	3.0
MELILOTUS OFFICINALIS	0	3	0	9	3.0
SUBTOTAL					8.8
FORB - INVADED					
ASTER SPECIES	0	0	0	2	0.5
CHAENACTIS DOUGLASII	1	2	0	2	1.3
HAPLOPAPPUS NUTTALLII	0	3	0	0	0.8
IPOMOPSIS AGGREGATA	0	0	0	1	0.3
MACHAERANTHERA SPECIES	0	1	2	1	1.0
PHYSARIA FLORIBUNDA	0	1	0	0	0.3
SENECIO MULTILOBATUS	0	1	1	0	0.5
SUBTOTAL					4.5
GRASS - PLANTED					
AGROPYRON SPECIES	15	22	24	25	21.5
AGROPYRON TRICHOPHORUM	3	3	6	4	4.0
ELYMUS CINEREUS	2	0	0	0	0.5
STIPA VIRIDULA	4	2	0	0	1.5
SUBTOTAL					27.5
GRASS - INVADED					
BROMUS TECTORUM	0	1	0	0	0.3
SITANION HYSTRIX	0	1	0	0	0.3
SUBTOTAL					0.5
SHRUB - PLANTED					
CERATOIDES LANATA	0	0	0	1	0.3
CHRYSOTHAMNUS NAUSEOSUS	3	1	2	1	1.8
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	0	4	1.0
PURSHIA TRIDENTATA	0	0	1	0	0.3
SUBTOTAL					3.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	2	0	0	0	0.5
SUBTOTAL					0.5
TOTAL PLANTED SPECIES					39.5
TOTAL INVADED SPECIES					5.5
GRAND TOTAL					45.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS				TREATMENT PLOT
	#5	#6	#7	#8	AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	9	23	0	0	8.0
LINUM LEWISII	14	11	0	0	6.3
MELILOTUS OFFICINALIS	3	0	4	24	7.8
SUBTOTAL					22.0
FORB - INVADED					
ASTRAGALUS PURSHII	0	1	0	0	0.3
CHAENACTIS DOUGLASII	0	0	1	0	0.3
CRYPTANTHA SERICEA	0	0	3	0	0.8
IPOMOPSIS AGGREGATA	0	0	1	0	0.3
MACHAERANTHERA SPECIES	2	0	0	0	0.5
SENECIO MULTILOBATUS	1	0	0	0	0.3
SUBTOTAL					2.3
GRASS - PLANTED					
AGROPYRON SPECIES	7	0	24	11	10.5
AGROPYRON TRICHOPHORUM	3	0	3	0	1.5
ORYZOPSIS HYMENOIDES	3	2	0	2	1.8
STIPA VIRIDULA	0	2	0	0	0.5
SUBTOTAL					14.3
GRASS - INVADED					
BROMUS TECTORUM	27	7	0	4	9.5
SITANION HYSTRIX	1	1	0	9	2.8
SUBTOTAL					12.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	0	1	0.3
CERATOIDES LANATA	0	0	1	0	0.3
CHRYSOTHAMNUS NAUSEOSUS	0	0	2	1	0.8
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	0	1	0.3
SUBTOTAL					1.5
TOTAL PLANTED SPECIES					37.8
TOTAL INVADED SPECIES					14.5
GRAND TOTAL					52.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	1	12	0	0	3.3
LINUM LEWISII	0	0	0	4	1.0
MELILOTUS OFFICINALIS	0	17	31	6	13.5
SUBTOTAL					17.8
FORB - INVADED					
CHAENACTIS DOUGLASII	0	0	1	1	0.5
IPOMOPSIS AGGREGATA	0	0	3	0	0.8
PENSTEMON FREMONTII	0	0	2	0	0.5
SENECIO MULTILOBATUS	1	0	0	1	0.5
SUBTOTAL					2.3
GRASS - PLANTED					
AGROPYRON SPECIES	28	27	16	14	21.3
AGROPYRON TRICHOPHORUM	4	7	3	6	5.0
STIPA VIRIDULA	0	0	5	0	1.3
SUBTOTAL					27.5
GRASS - INVADED					
BROMUS TECTORUM	3	0	1	0	1.0
SITANION HYSTRIX	0	0	2	2	1.0
STIPA COMATA	14	0	0	3	4.3
SUBTOTAL					6.3
SHRUB - PLANTED					
CERATOIDES LANATA	1	1	2	4	2.0
CHRYSOTHAMNUS NAUSEOSUS	7	1	3	2	3.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	1	0	2	0.8
SUBTOTAL					6.0
TOTAL PLANTED SPECIES					51.3
TOTAL INVADED SPECIES					8.5
GRAND TOTAL					59.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
LINUM LEWISII	23	4	0	4	7.8
MELILOTUS OFFICINALIS	2	4	2	2	2.5
SUBTOTAL					10.3
FORB - INVADED					
CHAENACTIS DOUGLASII	0	0	0	1	0.3
MACHAERANTHERA SPECIES	2	0	0	0	0.5
SUBTOTAL					0.8
GRASS - PLANTED					
AGROPYRON SPECIES	3	22	26	11	15.5
AGROPYRON TRICHOPHORUM	1	1	1	4	1.8
ELYMUS CINEREUS	1	0	0	0	0.3
SUBTOTAL					17.5
GRASS - INVADED					
AGROPYRON CRISTATUM	3	0	0	0	0.8
BROMUS TECTORUM	22	0	0	0	5.5
SUBTOTAL					6.3
SHRUB - PLANTED					
CERATOIDES LANATA	0	0	1	1	0.5
CHRYSOTHAMNUS NAUSEOSUS	0	0	13	5	4.5
SUBTOTAL					5.0
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	3	0	0.8
SUBTOTAL					0.8
TOTAL PLANTED SPECIES					32.8
TOTAL INVADED SPECIES					7.8
GRAND TOTAL					40.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	9	7	4	0	5.0
LINUM LEWISII	3	3	5	14	6.3
MELILOTUS OFFICINALIS	11	3	2	9	6.3
SUBTOTAL					17.5
FORB - INVADED					
ASTRAGALUS PURSHII	0	1	1	0	0.5
CHAENACTIS DOUGLASII	0	0	1	1	0.5
CRYPTANTHA SERICEA	1	0	0	0	0.3
HAPLOPAPPUS NUTTALLII	0	1	0	0	0.3
IPOMOPSIS AGGREGATA	0	0	1	1	0.5
PHLOX HOODII	0	1	0	0	0.3
PHYSARIA FLORIBUNDA	0	0	1	1	0.5
SENECIO MULTILOBATUS	0	0	1	1	0.5
UNKNOWN FORB	0	1	0	0	0.3
SUBTOTAL					3.5
GRASS - PLANTED					
AGROPYRON SPECIES	14	9	14	8	11.3
AGROPYRON TRICHOPHORUM	1	4	1	0	1.5
STIPA VIRIDULA	1	0	0	0	0.3
SUBTOTAL					13.0
SHRUB - PLANTED					
CERATOIDES LANATA	2	0	3	1	1.5
CHRYSOTHAMNUS NAUSEOSUS	0	1	4	1	1.5
PURSHIA TRIDENTATA	1	0	1	0	0.5
SUBTOTAL					3.5
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	1	2	1	0	1.0
SUBTOTAL					1.0
TOTAL PLANTED SPECIES					34.0
TOTAL INVADED SPECIES					4.5
GRAND TOTAL					38.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	0	0	0	2	0.5
LINUM LEWISII	9	5	9	0	5.8
MELILOTUS OFFICINALIS	51	36	17	41	36.3
SPHAERALCEA COCCINEA	1	0	0	0	0.3
SUBTOTAL					42.8
FORB - INVADED					
CRYPTANTHA SERICEA	0	1	0	0	0.3
SUBTOTAL					0.3
GRASS - PLANTED					
AGROPYRON SPECIES	6	0	12	16	8.5
AGROPYRON TRICHOPHORUM	4	9	7	15	8.8
ORYZOPSIS HYMENOIDES	3	1	4	0	2.0
SUBTOTAL					19.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	1	1	0	1	0.8
CERATOIDES LANATA	0	1	1	0	0.5
CHRYSOTHAMNUS NAUSEOSUS	0	0	0	4	1.0
SUBTOTAL					2.3
TOTAL PLANTED SPECIES					64.3
TOTAL INVADED SPECIES					0.3
GRAND TOTAL					64.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-1

REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	0	2	0	0.5
HEDYSARUM UTAHENSIS	6	7	4	0	4.3
LINUM LEWISII	1	4	1	19	6.3
MELILOTUS OFFICINALIS	11	1	0	2	3.5
SUBTOTAL					14.5
FORB - INVADED					
ASTER SPECIES	0	0	2	0	0.5
CHAENACTIS DOUGLASII	1	0	0	0	0.3
CRUCIFERAE SPECIES	0	0	0	1	0.3
HAPLOPAPPUS NUTTALLII	3	1	0	0	1.0
IPOMOPSIS AGGREGATA	0	0	0	1	0.3
LITHOSPERMUM SPECIES	0	0	1	0	0.3
MACHAERANTHERA SPECIES	1	0	0	0	0.3
SENECIO MULTILOBATUS	0	0	2	2	1.0
UNKNOWN FORB	0	0	0	1	0.3
SUBTOTAL					4.0
GRASS - PLANTED					
AGROPYRON SPECIES	17	11	13	9	12.5
AGROPYRON TRICHOPHORUM	4	6	8	2	5.0
ORYZOPSIS HYMENOIDES	0	1	1	0	0.5
SUBTOTAL					18.0
GRASS - INVADED					
BROMUS TECTORUM	0	0	1	0	0.3
SUBTOTAL					0.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	1	5	0	0	1.5
ATRIPLEX CANESCENS	0	0	0	1	0.3
CERATOIDES LANATA	0	1	1	0	0.5
CHRYSOTHAMNUS NAUSEOSUS	1	0	3	0	1.0
SUBTOTAL					3.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	1	0	0	0	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					35.8
TOTAL INVADED SPECIES					4.5
GRAND TOTAL					40.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	9	4	0	0	3.3
LINUM LEWISII	25	11	1	4	10.3
MELILOTUS OFFICINALIS	12	9	14	9	11.0
SUBTOTAL					24.5
FORB - INVADED					
CHAENACTIS DOUGLASII	0	0	0	1	0.3
COMANDRA UMBELLATA	0	0	1	0	0.3
CRYPTANTHA SERICEA	0	1	0	0	0.3
HAPLOPAPPUS NUTTALLII	0	0	2	0	0.5
IPOMOPSIS AGGREGATA	0	1	2	2	1.3
LUPINUS SPECIES	0	3	0	0	0.8
PHYSARIA FLORIBUNDA	0	0	1	0	0.3
SENECIO MULTILOBATUS	0	2	1	0	0.8
SUBTOTAL					4.3
GRASS - PLANTED					
AGROPYRON SPECIES	7	2	8	16	8.3
AGROPYRON TRICHOPHORUM	1	0	10	4	3.8
ORYZOPSIS HYMENOIDES	0	1	0	0	0.3
STIPA VIRIDULA	0	2	3	0	1.3
SUBTOTAL					13.5
GRASS - INVADED					
BROMUS TECTORUM	8	17	5	0	7.5
SITANION HYSTRIX	1	12	0	0	3.3
SUBTOTAL					10.8
SHRUB - PLANTED					
CERATOIDES LANATA	0	0	2	1	0.8
CHRYSOTHAMNUS NAUSEOSUS	0	0	0	4	1.0
CHRYSOTHAMNUS VISCIDIFLORUS	1	0	1	0	0.5
PURSHIA TRIDENTATA	0	0	3	0	0.8
SUBTOTAL					3.0
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	3	1	1.0
SUBTOTAL					1.0
TOTAL PLANTED SPECIES					41.0
TOTAL INVADED SPECIES					16.0
GRAND TOTAL					57.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-1

REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	38	0	0	2	10.0
LINUM LEWISII	0	0	3	0	0.8
MELILOTUS OFFICINALIS	0	1	6	6	3.3
SUBTOTAL					14.0
FORB - INVADED					
CHAENACTIS DOUGLASII	0	0	1	2	0.8
IPOMOPSIS AGGREGATA	0	2	0	0	0.5
SUBTOTAL					1.3
GRASS - PLANTED					
AGROPYRON SPECIES	29	48	11	24	28.0
AGROPYRON TRICHOPHORUM	6	1	1	0	2.0
ORYZOPSIS HYMENOIDES	0	0	1	0	0.3
STIPA VIRIDULA	2	0	0	4	1.5
SUBTOTAL					31.8
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	11	0	2.8
ATRIPLEX CANESCENS	0	0	0	1	0.3
CERATOIDES LANATA	0	1	0	4	1.3
CHRYSOTHAMNUS NAUSEOSUS	1	9	3	6	4.8
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	9	0	2.3
SUBTOTAL					11.3
TOTAL PLANTED SPECIES					57.0
TOTAL INVADED SPECIES					1.3
GRAND TOTAL					58.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	0	12	0	0	3.0
LINUM LEWISII	0	0	11	15	6.5
MELILOTUS OFFICINALIS	7	3	0	19	7.3
SPHAERALCEA COCCINEA	1	0	0	0	0.3
SUBTOTAL					17.0
FORB - INVADED					
ASTRAGALUS PURSHII	2	1	0	0	0.8
CHAENACTIS DOUGLASII	1	4	3	2	2.5
HAPLOPAPPUS NUTTALLII	0	1	0	0	0.3
IPOMOPSIS AGGREGATA	0	0	0	2	0.5
MACHAERANTHERA SPECIES	6	4	2	1	3.3
PHYSARIA FLORIBUNDA	0	1	0	0	0.3
SENECIO MULTILOBATUS	1	1	0	0	0.5
UNKNOWN FORB	1	1	0	0	0.5
SUBTOTAL					8.5
GRASS - PLANTED					
AGROPYRON SPECIES	4	7	3	17	7.8
AGROPYRON TRICHOPHORUM	1	1	0	0	0.5
ORYZOPSIS HYMENOIDES	0	1	0	0	0.3
STIPA VIRIDULA	0	0	1	0	0.3
SUBTOTAL					8.8
GRASS - INVADED					
BROMUS TECTORUM	1	0	9	1	2.8
KOELERIA MACRANTHA	2	0	0	0	0.5
SUBTOTAL					3.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	7	0	0	0	1.8
CERATOIDES LANATA	0	0	1	0	0.3
CHRYSOTHAMNUS NAUSEOSUS	1	1	3	0	1.3
SUBTOTAL					3.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	3	4	3	2.5
SUBTOTAL					2.5
TOTAL PLANTED SPECIES					29.0
TOTAL INVADED SPECIES					14.3
GRAND TOTAL					43.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
LINUM LEWISII	0	9	0	3	3.0
MELILOTUS OFFICINALIS	3	7	8	29	11.8
SPHAERALCEA COCCINEA	0	0	0	2	0.5
SUBTOTAL					15.3
FORB - INVADED					
ASTRAGALUS PURSHII	0	1	0	0	0.3
IPOMOPSIS AGGREGATA	1	0	0	0	0.3
MACHAERANTHERA SPECIES	4	0	0	0	1.0
SENECIO MULTILOBATUS	0	1	1	1	0.8
SUBTOTAL					2.3
GRASS - PLANTED					
AGROPYRON SPECIES	2	1	28	15	11.5
AGROPYRON TRICHOPHORUM	0	0	3	6	2.3
SUBTOTAL					13.8
GRASS - INVADED					
BROMUS TECTORUM	7	32	0	0	9.8
SITANION HYSTRIX	1	11	0	0	3.0
SUBTOTAL					12.8
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	14	0	1	12	6.8
CHRYSOTHAMNUS VISCIDIFLORUS	0	1	0	0	0.3
PURSHIA TRIDENTATA	0	0	2	0	0.5
SUBTOTAL					7.5
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	0	3	0.8
SUBTOTAL					0.8
TOTAL PLANTED SPECIES					36.5
TOTAL INVADED SPECIES					15.8
GRAND TOTAL					52.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
LINUM LEWISII	3	0	0	8	2.8
MELILOTUS OFFICINALIS	31	27	11	28	24.3
SUBTOTAL					27.0
FORB - INVADED					
ASTER SPECIES	0	0	1	0	0.3
CHAENACTIS DOUGLASII	0	0	1	0	0.3
ERIOGONUM OVALIFOLIUM	0	0	1	0	0.3
SENECIO MULTILOBATUS	0	0	1	0	0.3
SUBTOTAL					1.0
GRASS - PLANTED					
AGROPYRON SPECIES	24	23	33	14	23.5
AGROPYRON TRICHOPHORUM	6	3	0	3	3.0
ELYMUS CINEREUS	0	0	1	0	0.3
SUBTOTAL					26.8
GRASS - INVADED					
BROMUS TECTORUM	0	0	3	1	1.0
SITANION HYSTRIX	0	0	3	3	1.5
SUBTOTAL					2.5
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	1	0	0	0	0.3
CERATOIDES LANATA	3	0	11	1	3.8
CHRYSOTHAMNUS NAUSEOSUS	4	0	0	1	1.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	0	1	0.3
PURSHIA TRIDENTATA	0	0	0	7	1.8
SUBTOTAL					7.3
TOTAL PLANTED SPECIES					61.0
TOTAL INVADED SPECIES					3.5
GRAND TOTAL					64.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	0	0	6	1.5
LINUM LEWISII	0	0	29	2	7.8
MELILOTUS OFFICINALIS	1	1	3	0	1.3
SUBTOTAL					10.5
FORB - INVADED					
ASTRAGALUS DIVERSIFOLIUS	0	0	1	0	0.3
ASTRAGALUS PURSHII	0	1	0	0	0.3
CHAENACTIS DOUGLASII	0	1	1	1	0.8
CREPIS OCCIDENTALIS	0	0	1	0	0.3
CRYPTANTHA SERICEA	0	0	2	0	0.5
MACHAERANTHERA SPECIES	1	1	1	0	0.8
PHLOX HOODII	0	0	0	1	0.3
PHYSARIA FLORIBUNDA	0	1	1	0	0.5
SUBTOTAL					3.5
GRASS - PLANTED					
AGROPYRON SPECIES	23	21	3	9	14.0
AGROPYRON TRICHOPHORUM	6	1	0	3	2.5
STIPA VIRIDULA	0	0	2	0	0.5
SUBTOTAL					17.0
GRASS - INVADED					
BROMUS TECTORUM	3	2	0	0	1.3
SITANION HYSTRIX	1	3	4	2	2.5
STIPA COMATA	0	6	0	0	1.5
SUBTOTAL					5.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	3	1	11	3.8
CERATOIDES LANATA	3	0	0	13	4.0
CHRYSOTHAMNUS NAUSEOSUS	9	1	0	0	2.5
CHRYSOTHAMNUS VISCIDIFLORUS	0	3	1	4	2.0
SUBTOTAL					12.3
TOTAL PLANTED SPECIES					39.8
TOTAL INVADED SPECIES					8.8
GRAND TOTAL					48.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	0	0	2	0.5
LINUM LEWISII	0	0	0	7	1.8
MELILOTUS OFFICINALIS	24	14	33	11	20.5
SUBTOTAL					22.8
FORB - INVADED					
CHAENACTIS DOUGLASII	2	2	0	0	1.0
MACHAERANTHERA SPECIES	1	3	2	1	1.8
PHYSARIA FLORIBUNDA	0	1	0	1	0.5
UNKNOWN FORB	0	0	0	1	0.3
SUBTOTAL					3.5
GRASS - PLANTED					
AGROPYRON SPECIES	16	3	7	4	7.5
AGROPYRON TRICHOPHORUM	4	1	3	2	2.5
ORYZOPSIS HYMENOIDES	0	0	3	3	1.5
SUBTOTAL					11.5
GRASS - INVADED					
AGROPYRON CRISTATUM	0	1	0	0	0.3
BROMUS TECTORUM	11	14	4	2	7.8
KOELERIA MACRANTHA	0	1	1	0	0.5
SITANION HYSTRIX	0	1	2	3	1.5
STIPA COMATA	2	0	0	0	0.5
SUBTOTAL					10.5
SHRUB - PLANTED					
CERATOIDES LANATA	0	0	0	1	0.3
CHRYSOTHAMNUS NAUSEOSUS	0	2	1	0	0.8
CHRYSOTHAMNUS VISCIDIFLORUS	1	0	1	0	0.5
SUBTOTAL					1.5
TOTAL PLANTED SPECIES					35.8
TOTAL INVADED SPECIES					14.0
GRAND TOTAL					49.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	17	0	28	0	11.3
LINUM LEWISII	8	0	15	14	9.3
MELILOTUS OFFICINALIS	19	0	18	17	13.5
SUBTOTAL					34.0
FORB - INVADED					
ASTRAGALUS PURSHII	0	0	1	0	0.3
ASTER SPECIES	0	1	0	0	0.3
CHAENACTIS DOUGLASII	0	4	2	1	1.8
PHYSARIA FLORIBUNDA	0	0	1	0	0.3
SENECIO MULTILOBATUS	0	1	0	0	0.3
SUBTOTAL					2.8
GRASS - PLANTED					
AGROPYRON SPECIES	14	13	9	3	9.8
AGROPYRON TRICHOPHORUM	4	0	0	0	1.0
ELYMUS CINEREUS	2	0	0	0	0.5
ORYZOPSIS HYMENOIDES	2	6	2	3	3.3
SUBTOTAL					14.5
GRASS - INVADED					
BROMUS TECTORUM	3	0	11	14	7.0
SITANION HYSTRIX	1	2	0	0	0.8
STIPA COMATA	0	0	4	4	2.0
SUBTOTAL					9.8
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	2	0	1	0.8
CHRYSOTHAMNUS NAUSEOSUS	0	14	0	18	8.0
SUBTOTAL					8.8
TOTAL PLANTED SPECIES					57.3
TOTAL INVADED SPECIES					12.5
GRAND TOTAL					69.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	11	0	0	2.8
LINUM LEWISII	0	3	0	3	1.5
MELILOTUS OFFICINALIS	18	2	0	13	8.3
SPHAERALCEA COCCINEA	0	0	0	1	0.3
SUBTOTAL					12.8
FORB - INVADED					
ASTRAGALUS PURSHII	0	1	1	1	0.8
CHAENACTIS DOUGLASII	0	1	1	2	1.0
CRYPTANTHA SERICEA	0	0	1	0	0.3
HAPLOPAPPUS NUTTALLII	0	3	0	0	0.8
MACHAERANTHERA SPECIES	2	0	0	0	0.5
UNKNOWN FORB	0	1	4	0	1.3
SUBTOTAL					4.5
GRASS - PLANTED					
AGROPYRON SPECIES	18	19	4	15	14.0
AGROPYRON TRICHOPHORUM	0	2	0	0	0.5
ORYZOPSIS HYMENOIDES	6	0	4	0	2.5
SUBTOTAL					17.0
GRASS - INVADED					
BROMUS TECTORUM	0	0	0	1	0.3
SITANION HYSTRIX	4	2	2	0	2.0
SUBTOTAL					2.3
SHRUB - PLANTED					
CERATOIDES LANATA	0	2	4	1	1.8
CHRYSOTHAMNUS NAUSEOSUS	0	3	0	0	0.8
PURSHIA TRIDENTATA	1	0	0	0	0.3
SUBTOTAL					2.8
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	3	3	0	1.5
SUBTOTAL					1.5
TOTAL PLANTED SPECIES					32.5
TOTAL INVADED SPECIES					8.3
GRAND TOTAL					40.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS				TREATMENT PLOT
	#5	#6	#7	#8	AVERAGE
FORB - PLANTED					
LINUM LEWISII	0	1	11	1	3.3
MELILOTUS OFFICINALIS	1	0	0	5	1.5
SUBTOTAL					4.8
FORB - INVADED					
CHAENACTIS DOUGLASII	1	0	1	0	0.5
CRYPTANTHA SERICEA	0	0	1	0	0.3
HAPLOPAPPUS NUTTALLII	0	10	0	3	3.3
PHYSARIA FLORIBUNDA	0	0	1	0	0.3
SENECIO MULTILOBATUS	0	1	0	0	0.3
SUBTOTAL					4.5
GRASS - PLANTED					
AGROPYRON SPECIES	28	26	13	13	20.0
AGROPYRON TRICHOPHORUM	4	2	1	0	1.8
ELYMUS CINEREUS	0	0	2	0	0.5
ORYZOPSIS HYMENOIDES	0	0	0	6	1.5
STIPA VIRIDULA	0	3	0	0	0.8
SUBTOTAL					24.5
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	4	11	3.8
ATRIPLEX CANESCENS	1	0	0	0	0.3
CERATOIDES LANATA	1	1	0	0	0.5
CHRYSOTHAMNUS NAUSEOSUS	1	0	1	0	0.5
SUBTOTAL					5.0
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	1	0	3	0	1.0
SUBTOTAL					1.0
TOTAL PLANTED SPECIES					34.3
TOTAL INVADED SPECIES					5.5
GRAND TOTAL					39.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
LINUM LEWISII	17	3	0	4	6.0
MELILOTUS OFFICINALIS	6	0	3	14	5.8
SUBTOTAL					11.8
FORB - INVADED					
ASTRAGALUS SPATULATUS	0	0	0	1	0.3
ASTER SPECIES	1	0	0	0	0.3
CHAENACTIS DOUGLASII	1	1	1	0	0.8
CRYPTANTHA SERICEA	1	1	1	0	0.8
HAPLOPAPPUS NUTTALLII	0	3	0	0	0.8
IPOMOPSIS AGGREGATA	2	0	0	0	0.5
LUPINUS SPECIES	0	1	0	0	0.3
SUBTOTAL					3.5
GRASS - PLANTED					
AGROPYRON SPECIES	14	26	42	4	21.5
AGROPYRON TRICHOPHORUM	1	7	1	0	2.3
ORYZOPSIS HYMENOIDES	3	0	0	0	0.8
STIPA VIRIDULA	0	6	0	5	2.8
SUBTOTAL					27.3
GRASS - INVADED					
KOELERIA MACRANTHA	0	0	0	1	0.3
SITANION HYSTRIX	2	0	0	0	0.5
SUBTOTAL					0.8
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	14	3	1	12	7.5
CHRYSOTHAMNUS NAUSEOSUS	1	0	2	0	0.8
SUBTOTAL					8.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	0	1	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					47.3
TOTAL INVADED SPECIES					4.5
GRAND TOTAL					51.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	11	0	3	26	10.0
LINUM LEWISII	3	0	3	3	2.3
MELILOTUS OFFICINALIS	4	0	1	0	1.3
SPHAERALCEA COCCINEA	0	0	1	0	0.3
SUBTOTAL					13.8
FORB - INVADED					
CHAENACTIS DOUGLASII	0	0	1	1	0.5
HAPLOPAPPUS NUTTALLII	0	1	0	0	0.3
IPOMOPSIS AGGREGATA	0	1	0	0	0.3
LUPINUS SPECIES	0	0	0	1	0.3
MACHAERANTHERA SPECIES	0	1	0	0	0.3
UNKNOWN FORB	0	1	0	0	0.3
SUBTOTAL					1.8
GRASS - PLANTED					
AGROPYRON SPECIES	17	19	19	19	18.5
AGROPYRON TRICHOPHORUM	7	7	7	0	5.3
STIPA VIRIDULA	0	0	0	3	0.8
SUBTOTAL					24.5
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	1	0	4	1.3
CERATOIDES LANATA	3	0	0	0	0.8
CHRYSOTHAMNUS NAUSEOSUS	0	0	4	2	1.5
CHRYSOTHAMNUS VISCIDIFLORUS	1	0	0	0	0.3
PURSHIA TRIDENTATA	5	0	4	1	2.5
SUBTOTAL					6.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	1	0	1	0	0.5
SUBTOTAL					0.5
TOTAL PLANTED SPECIES					44.5
TOTAL INVADED SPECIES					2.3
GRAND TOTAL					46.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	0	21	6	6.8
LINUM LEWISII	3	4	3	17	6.8
SUBTOTAL					13.5
FORB - INVADED					
CHAENACTIS DOUGLASII	1	1	1	1	1.0
CRYPTANTHA SERICEA	1	0	0	0	0.3
HAPLOPAPPUS NUTTALLII	2	11	0	1	3.5
IPOMOPSIS AGGREGATA	5	0	0	0	1.3
LUPINUS SPECIES	0	1	0	0	0.3
MACHAERANTHERA SPECIES	0	0	0	1	0.3
PHYSARIA FLORIBUNDA	0	0	1	0	0.3
SENECIO MULTILOBATUS	0	2	0	0	0.5
UNKNOWN FORB	0	1	0	0	0.3
SUBTOTAL					7.5
GRASS - PLANTED					
AGROPYRON SPECIES	9	9	14	11	10.8
AGROPYRON TRICHOPHORUM	0	3	3	4	2.5
ORYZOPSIS HYMENOIDES	0	0	2	0	0.5
STIPA VIRIDULA	0	1	0	0	0.3
SUBTOTAL					14.0
GRASS - INVADED					
BROMUS TECTORUM	0	3	0	0	0.8
KOELERIA MACRANTHA	0	0	2	2	1.0
SITANION HYSTRIX	0	1	0	0	0.3
SUBTOTAL					2.0
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	10	1	5	0	4.0
ATRIPLEX CANESCENS	0	0	1	0	0.3
CERATOIDES LANATA	0	0	1	1	0.5
CHRYSOTHAMNUS VISCIDIFLORUS	3	0	0	0	0.8
PURSHIA TRIDENTATA	0	0	1	2	0.8
SUBTOTAL					6.3
TOTAL PLANTED SPECIES					33.8
TOTAL INVADED SPECIES					9.5
GRAND TOTAL					43.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	27	2	10	4	10.8
LINUM LEWISII	10	13	5	4	8.0
MELILOTUS OFFICINALIS	12	12	15	18	14.3
SUBTOTAL					33.0
FORB - INVADED					
CHAENACTIS DOUGLASII	1	0	1	11	3.3
CRYPTANTHA SERICEA	0	0	0	1	0.3
IPOMOPSIS AGGREGATA	0	0	1	3	1.0
LUPINUS SPECIES	0	8	0	0	2.0
SENECIO MULTILOBATUS	0	0	0	3	0.8
UNKNOWN FORB	1	1	0	1	0.8
SUBTOTAL					8.0
GRASS - PLANTED					
AGROPYRON SPECIES	6	13	21	7	11.8
AGROPYRON TRICHOPHORUM	21	8	0	3	8.0
ORYZOPSIS HYMENOIDES	0	0	6	0	1.5
STIPA VIRIDULA	2	3	4	0	2.3
SUBTOTAL					23.5
GRASS - INVADED					
BROMUS TECTORUM	0	0	0	2	0.5
POA SPECIES	0	0	3	0	0.8
STIPA COMATA	2	0	0	0	0.5
SUBTOTAL					1.8
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	1	0	0.3
CERATOIDES LANATA	0	0	6	0	1.5
CHRYSOTHAMNUS NAUSEOSUS	0	5	0	0	1.3
SUBTOTAL					3.0
TOTAL PLANTED SPECIES					59.5
TOTAL INVADED SPECIES					9.8
GRAND TOTAL					69.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	0	0	0	3	0.8
HEDYSARUM UTAHENSIS	0	0	4	4	2.0
LINUM LEWISII	3	0	9	2	3.5
MELILOTUS OFFICINALIS	1	0	0	0	0.3
SPHAERALCEA COCCINEA	0	0	1	0	0.3
SUBTOTAL					6.8
FORB - INVADED					
CHAENACTIS DOUGLASII	0	0	0	1	0.3
CRUCIFERAE SPECIES	0	0	0	1	0.3
HAPLOPAPPUS NUTTALLII	0	0	0	1	0.3
LUPINUS SPECIES	2	0	0	0	0.5
MACHAERANTHERA SPECIES	0	0	6	7	3.3
UNKNOWN FORB	0	0	1	0	0.3
SUBTOTAL					4.8
GRASS - PLANTED					
AGROPYRON SPECIES	11	11	11	15	12.0
AGROPYRON TRICHOPHORUM	14	3	3	3	5.8
ELYMUS CINEREUS	0	1	4	0	1.3
ORYZOPSIS HYMENOIDES	0	2	0	1	0.8
SUBTOTAL					19.8
SHRUB - PLANTED					
CERATOIDES LANATA	0	0	0	2	0.5
CHRYSOTHAMNUS NAUSEOSUS	1	8	2	0	2.8
SUBTOTAL					3.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	2	0	0	0.5
SUBTOTAL					0.5
TOTAL PLANTED SPECIES					29.8
TOTAL INVADED SPECIES					5.3
GRAND TOTAL					35.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	7	0	2	12	5.3
LINUM LEWISII	9	0	4	3	4.0
MELILOTUS OFFICINALIS	0	8	4	1	3.3
SUBTOTAL					12.5
FORB - INVADED					
ASTRAGALUS PURSHII	1	0	0	0	0.3
CHAENACTIS DOUGLASII	1	1	1	1	1.0
HAPLOPAPPUS NUTTALLII	1	14	7	0	5.5
IPOMOPSIS AGGREGATA	0	0	0	2	0.5
MACHAERANTHERA SPECIES	1	1	0	6	2.0
SENECIO MULTILOBATUS	0	1	1	0	0.5
UNKNOWN FORB	1	1	0	1	0.8
SUBTOTAL					10.5
GRASS - PLANTED					
AGROPYRON SPECIES	3	0	7	3	3.3
AGROPYRON TRICHOPHORUM	0	0	3	1	1.0
SUBTOTAL					4.3
GRASS - INVADED					
BROMUS TECTORUM	19	9	3	7	9.5
SITANION HYSTRIX	6	6	0	0	3.0
STIPA COMATA	0	0	0	3	0.8
SUBTOTAL					13.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	8	2	2.5
CHRYSOTHAMNUS NAUSEOSUS	0	0	2	1	0.8
PURSHIA TRIDENTATA	0	0	1	0	0.3
SUBTOTAL					3.5
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	0	0	0.0
SUBTOTAL					0.0
TOTAL PLANTED SPECIES					20.3
TOTAL INVADED SPECIES					23.8
GRAND TOTAL					44.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	6	0	4	15	6.3
LINUM LEWISII	4	10	7	0	5.3
MELILOTUS OFFICINALIS	13	41	39	20	28.3
SUBTOTAL					39.8
FORB - INVADED					
ASTRAGALUS PURSHII	0	1	0	0	0.3
CHAENACTIS DOUGLASII	0	0	1	3	1.0
IPOMOPSIS AGGREGATA	0	1	0	0	0.3
LUPINUS SPECIES	7	1	0	0	2.0
SENECIO MULTILOBATUS	0	0	1	1	0.5
UNKNOWN FORB	1	0	0	0	0.3
SUBTOTAL					4.3
GRASS - PLANTED					
AGROPYRON SPECIES	7	14	19	16	14.0
AGROPYRON TRICHOPHORUM	2	0	4	11	4.3
ORYZOPSIS HYMENOIDES	16	0	0	2	4.5
STIPA VIRIDULA	3	6	0	0	2.3
SUBTOTAL					25.0
GRASS - INVADED					
BROMUS TECTORUM	24	0	0	0	6.0
SITANION HYSTRIX	4	0	0	0	1.0
SUBTOTAL					7.0
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	1	0	0.3
ATRIPLEX CANESCENS	0	0	0	1	0.3
CERATOIDES LANATA	0	1	6	0	1.8
PURSHIA TRIDENTATA	0	0	0	1	0.3
SUBTOTAL					2.5
TOTAL PLANTED SPECIES					67.3
TOTAL INVADED SPECIES					11.3
GRAND TOTAL					78.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
LINUM LEWISII	0	3	7	3	3.3
MACHAERANTHERA SPECIES	0	2	0	2	1.0
SPHAERALCEA COCCINEA	0	0	1	0	0.3
SUBTOTAL					4.5
FORB - INVADED					
CHAENACTIS DOUGLASII	7	10	2	18	9.3
LUPINUS SPECIES	0	0	6	4	2.5
PHLOX LONGIFOLIA	0	1	0	0	0.3
SENECIO MULTILOBATUS	1	0	0	0	0.3
UNKNOWN FORB	1	0	0	0	0.3
SUBTOTAL					12.5
GRASS - PLANTED					
AGROPYRON SPECIES	14	17	16	4	12.8
AGROPYRON TRICHOPHORUM	0	2	0	0	0.5
ORYZOPSIS HYMENOIDES	5	0	6	0	2.8
STIPA VIRIDULA	2	0	2	0	1.0
SUBTOTAL					17.0
GRASS - INVADED					
AGROPYRON CRISTATUM	2	0	0	0	0.5
BROMUS TECTORUM	0	1	0	0	0.3
STIPA COMATA	3	0	0	0	0.8
SUBTOTAL					1.5
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	1	0	0	0.3
CERATOIDES LANATA	1	0	0	0	0.3
CHRYSOTHAMNUS NAUSEOSUS	0	0	4	0	1.0
SUBTOTAL					1.5
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	3	0	0.8
SUBTOTAL					0.8
TOTAL PLANTED SPECIES					23.0
TOTAL INVADED SPECIES					14.8
GRAND TOTAL					37.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS				TREATMENT PLOT
	#5	#6	#7	#8	AVERAGE
FORB - PLANTED					
LINUM LEWISII	9	0	4	0	3.3
MELILOTUS OFFICINALIS	0	0	7	0	1.8
SPHAERALCEA COCCINEA	0	0	1	0	0.3
SUBTOTAL					5.3
FORB - INVADED					
ASTRAGALUS PURSHII	0	3	0	0	0.8
CHAENACTIS DOUGLASII	0	5	1	0	1.5
IPOMOPSIS AGGREGATA	0	0	1	0	0.3
PHYSARIA FLORIBUNDA	1	0	0	0	0.3
SENECIO MULTILOBATUS	0	0	1	0	0.3
SUBTOTAL					3.0
GRASS - PLANTED					
AGROPYRON SPECIES	24	18	17	18	19.3
AGROPYRON TRICHOPHORUM	4	7	10	8	7.3
ORYZOPSIS HYMENOIDES	0	0	9	2	2.8
STIPA VIRIDULA	0	0	0	2	0.5
SUBTOTAL					29.8
GRASS - INVADED					
AGROPYRON CRISTATUM	0	0	0	1	0.3
BROMUS TECTORUM	0	2	1	0	0.8
POA SPECIES	0	0	0	1	0.3
SITANION HYSTRIX	0	4	0	0	1.0
SUBTOTAL					2.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	0	5	1.3
SUBTOTAL					1.3
TOTAL PLANTED SPECIES					36.3
TOTAL INVADED SPECIES					5.3
GRAND TOTAL					41.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS				TREATMENT PLOT
	#5	#6	#7	#8	AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	0	14	16	7.5
LINUM LEWISII	11	6	9	7	8.3
LUPINUS SPECIES	0	6	0	0	1.5
MELILOTUS OFFICINALIS	13	0	0	0	3.3
SUBTOTAL					20.5
FORB - INVADED					
CHAENACTIS DOUGLASII	0	0	0	1	0.3
CRUCIFERAE SPECIES	1	0	0	0	0.3
PHLOX HOODII	0	0	0	1	0.3
SENECIO MULTILOBATUS	0	1	0	1	0.5
TRIFOLIUM GYMNOCARPON	0	0	0	1	0.3
SUBTOTAL					1.5
GRASS - PLANTED					
AGROPYRON SPECIES	13	3	14	15	11.3
AGROPYRON TRICHOPHORUM	2	1	8	4	3.8
ORYZOPSIS HYMENOIDES	0	1	3	0	1.0
STIPA VIRIDULA	5	0	11	4	5.0
SUBTOTAL					21.0
GRASS - INVADED					
AGROPYRON CRISTATUM	0	0	0	3	0.8
BROMUS TECTORUM	0	4	1	1	1.5
KOELERIA MACRANTHA	0	4	0	6	2.5
SITANION HYSTRIX	3	13	0	1	4.3
SUBTOTAL					9.0
SHRUB - PLANTED					
CHRYSOTHAMNUS NAUSEOSUS	2	0	0	0	0.5
PURSHIA TRIDENTATA	0	4	0	0	1.0
SUBTOTAL					1.5
TOTAL PLANTED SPECIES					43.0
TOTAL INVADED SPECIES					10.5
GRAND TOTAL					53.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	2	0	0	0	0.5
LINUM LEWISII	1	3	0	0	1.0
MELILOTUS OFFICINALIS	2	0	0	0	0.5
SUBTOTAL					2.0
FORB - INVADED					
CHAENACTIS DOUGLASII	0	0	0	1	0.3
CRYPTANTHA SERICEA	1	0	3	1	1.3
HAPLOPAPPUS NUTTALLII	0	0	7	0	1.8
IPOMOPSIS AGGREGATA	0	1	0	0	0.3
MACHAERANTHERA SPECIES	0	3	1	4	2.0
SENECIO MULTILOBATUS	1	1	1	0	0.8
UNKNOWN FORB	0	3	0	0	0.8
SUBTOTAL					7.0
GRASS - PLANTED					
AGROPYRON CRISTATUM	3	0	0	5	2.0
AGROPYRON SPECIES	12	13	6	12	10.8
AGROPYRON TRICHOPHORUM	4	1	3	3	2.8
ORYZOPSIS HYMENOIDES	0	0	8	3	2.8
STIPA VIRIDULA	0	8	0	0	2.0
SUBTOTAL					20.3
GRASS - INVADED					
BROMUS TECTORUM	5	6	31	3	11.3
KOELERIA MACRANTHA	2	0	0	0	0.5
SITANION HYSTRIX	0	0	2	2	1.0
SUBTOTAL					12.8
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	1	0	0	7	2.0
CERATOIDES LANATA	0	0	0	1	0.3
CHRYSOTHAMNUS NAUSEOSUS	0	0	0	1	0.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	1	0	0.3
SUBTOTAL					2.8
TOTAL PLANTED SPECIES					25.0
TOTAL INVADED SPECIES					19.8
GRAND TOTAL					44.8

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APPENDIX      .  PERCENT COVER OF PLANT SPECIES SAMPLED ON
                 EXPERIMENTAL REVEGETATION PLOT R-1
                        REPORT YEAR= 1982

BLOCK=1   MULCH TREATMENT= STRAW-NETTING
          FERTILIZER TREATMENT=NO FERTILIZER

     SPECIES                               SUBPLOTS                TREATMENT PLOT
                               #5       #6       #7       #8          AVERAGE

FORB  - PLANTED

  ASTRAGALUS CICER             16        2        0        0            4.5
  LINUM LEWISII                 2        1        4        3            2.5
  MELILOTUS OFFICINALIS         8        4        0        0            3.0
SUBTOTAL                                                               10.0

FORB  - INVADED

  ASTRAGALUS DIVERSIFOLIUS      0        0        0        1            0.3
  CHAENACTIS DOUGLASII          0        1        0        0            0.3
  IPOMOPSIS AGGREGATA           4        0        0        0            1.0
  MACHAERANTHERA SPECIES        0        0        0        1            0.3
  PHYSARIA FLORIBUNDA           0        1        0        0            0.3
  SENECIO MULTILOBATUS          0        0        1        0            0.3
SUBTOTAL                                                                2.3

GRASS - PLANTED

  AGROPYRON SPECIES            21       20       18       21           20.0
  AGROPYRON TRICHOPHORUM        9        3        6        8            6.5
  ORYZOPSIS HYMENOIDES          0        0        0        1            0.3
  STIPA VIRIDULA                2        1        2        5            2.5
SUBTOTAL                                                               29.3

GRASS - INVADED

  BROMUS TECTORUM               0        1        0        3            1.0
SUBTOTAL                                                                1.0

SHRUB - PLANTED

  ARTEMISIA TRIDENTATA          0        2        1        0            0.8
  CERATOIDES LANATA             0        0        1        0            0.3
  CHRYSOTHAMNUS NAUSEOSUS       0        0        1        0            0.3
  CHRYSOTHAMNUS VISCIDIFLORUS   1        3        3        0            1.8
SUBTOTAL                                                                3.0

SHRUB - INVADED

  GUTIERREZIA SAROTHRAE         0        3        0        0            0.8
SUBTOTAL                                                                0.8

TOTAL PLANTED SPECIES                                                  42.3
TOTAL INVADED SPECIES                                                   4.0
GRAND TOTAL                                                            46.3
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APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	2	12	3	0	4.3
LINUM LEWISII	7	0	0	6	3.3
MELILOTUS OFFICINALIS	2	37	0	44	20.8
SUBTOTAL					28.3
FORB - INVADED					
IPOMOPSIS AGGREGATA	1	0	0	0	0.3
SUBTOTAL					0.3
GRASS - PLANTED					
AGROPYRON SPECIES	14	7	18	9	12.0
AGROPYRON TRICHOPHORUM	9	16	8	7	10.0
STIPA VIRIDULA	0	0	5	0	1.3
SUBTOTAL					23.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	1	1	0	0	0.5
CERATOIDES LANATA	0	0	1	0	0.3
PURSHIA TRIDENTATA	0	0	7	11	4.5
SUBTOTAL					5.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	1	0	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					56.8
TOTAL INVADED SPECIES					0.5
GRAND TOTAL					57.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	9	5	3	4.3
LINUM LEWISII	2	5	8	2	4.3
SUBTOTAL					8.5
FORB - INVADED					
ASTER SPECIES	0	0	0	1	0.3
LUPINUS SPECIES	1	0	0	2	0.8
MACHAERANTHERA SPECIES	0	0	0	1	0.3
UNKNOWN FORB	0	0	0	1	0.3
SUBTOTAL					1.5
GRASS - PLANTED					
AGROPYRON SPECIES	21	18	17	7	15.8
AGROPYRON TRICHOPHORUM	11	9	7	0	6.8
STIPA VIRIDULA	0	0	0	4	1.0
SUBTOTAL					23.5
GRASS - INVADED					
SITANION HYSTRIX	0	0	1	0	0.3
SUBTOTAL					0.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	1	6	1.8
CERATOIDES LANATA	1	1	0	0	0.5
CHRYSOTHAMNUS NAUSEOSUS	0	2	0	1	0.8
CHRYSOTHAMNUS VISCIDIFLORUS	1	1	0	0	0.5
SUBTOTAL					3.5
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	1	0	0	0	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					35.5
TOTAL INVADED SPECIES					2.0
GRAND TOTAL					37.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS				TREATMENT PLOT
	#5	#6	#7	#8	AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	0	2	5	1.8
LINUM LEWISII	37	4	4	2	11.8
SUBTOTAL					13.5
FORB - INVADED					
ASTRAGALUS PURSHII	1	0	0	0	0.3
ASTRAGALUS SPATULATUS	1	0	0	0	0.3
CHAENACTIS DOUGLASII	0	2	2	1	1.3
IPOMOPSIS AGGREGATA	1	0	0	0	0.3
MACHAERANTHERA SPECIES	0	2	1	2	1.3
SUBTOTAL					3.3
GRASS - PLANTED					
AGROPYRON SPECIES	1	1	21	25	12.0
AGROPYRON TRICHOPHORUM	0	0	0	7	1.8
ELYMUS CINEREUS	0	0	0	1	0.3
STIPA VIRIDULA	0	4	3	0	1.8
SUBTOTAL					15.8
GRASS - INVADED					
BROMUS TECTORUM	12	32	0	1	11.3
KOELERIA MACRANTHA	0	1	1	0	0.5
SITANION HYSTRIX	0	1	0	0	0.3
SUBTOTAL					12.0
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	2	3	0	1.3
CERATOIDES LANATA	1	0	1	0	0.5
CHRYSOTHAMNUS NAUSEOSUS	0	1	1	0	0.5
SUBTOTAL					2.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	1	0	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					31.5
TOTAL INVADED SPECIES					15.5
GRAND TOTAL					47.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
LINUM LEWISII	0	0	0	2	0.5
SUBTOTAL					0.5
FORB - INVADED					
LUPINUS SPECIES	0	1	0	0	0.3
UNKNOWN FORB	0	0	1	0	0.3
SUBTOTAL					0.5
GRASS - PLANTED					
AGROPYRON SPECIES	41	31	3	26	25.3
AGROPYRON TRICHOPHORUM	5	9	0	1	3.8
ELYMUS CINEREUS	1	0	0	0	0.3
ORYZOPSIS HYMENOIDES	0	12	0	0	3.0
STIPA VIRIDULA	3	3	3	0	2.3
SUBTOTAL					34.5
GRASS - INVADED					
AGROPYRON CRISTATUM	2	4	0	0	1.5
BROMUS TECTORUM	4	1	0	13	4.5
SITANION HYSTRIX	0	1	0	0	0.3
STIPA COMATA	0	0	0	5	1.3
SUBTOTAL					7.5
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	1	1	1	0.8
ATRIPLEX CANESCENS	0	3	0	0	0.8
CERATOIDES LANATA	4	0	2	2	2.0
CHRYSOTHAMNUS NAUSEOSUS	0	1	0	0	0.3
SUBTOTAL					3.8
TOTAL PLANTED SPECIES					38.8
TOTAL INVADED SPECIES					8.0
GRAND TOTAL					46.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	21	22	0	10.8
LINUM LEWISII	9	0	0	2	2.8
MELILOTUS OFFICINALIS	14	0	0	2	4.0
SUBTOTAL					17.5
FORB - INVADED					
CHAENACTIS DOUGLASII	1	0	0	0	0.3
HAPLOPAPPUS NUTTALLII	2	0	0	0	0.5
IPOMOPSIS AGGREGATA	1	1	0	0	0.5
LUPINUS SPECIES	0	1	0	0	0.3
MACHAERANTHERA SPECIES	0	0	0	1	0.3
SUBTOTAL					1.8
GRASS - PLANTED					
AGROPYRON SPECIES	7	17	26	34	21.0
AGROPYRON TRICHOPHORUM	0	13	3	0	4.0
STIPA VIRIDULA	0	2	0	1	0.8
SUBTOTAL					25.8
GRASS - INVADED					
BROMUS TECTORUM	3	1	0	0	1.0
SUBTOTAL					1.0
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	3	0	0.8
CHRYSOTHAMNUS NAUSEOSUS	3	0	0	0	0.8
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	1	0	0.3
PURSHIA TRIDENTATA	8	0	0	0	2.0
SUBTOTAL					3.8
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	1	0	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					47.0
TOTAL INVADED SPECIES					3.0
GRAND TOTAL					50.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	0	0	1	0.3
LINUM LEWISII	8	9	13	2	8.0
SUBTOTAL					8.3
FORB - INVADED					
ASTRAGALUS PURSHII	0	0	1	0	0.3
IPOMOPSIS AGGREGATA	0	2	0	2	1.0
MACHAERANTHERA SPECIES	1	0	2	1	1.0
SENECIO MULTILOBATUS	0	1	1	0	0.5
TARAXACUM OFFICINALE	0	1	0	0	0.3
UNKNOWN FORB	0	0	1	1	0.5
SUBTOTAL					3.5
GRASS - PLANTED					
AGROPYRON SPECIES	38	23	12	17	22.5
AGROPYRON TRICHOPHORUM	3	3	0	10	4.0
STIPA VIRIDULA	0	0	0	3	0.8
SUBTOTAL					27.3
GRASS - INVADED					
BROMUS TECTORUM	0	6	0	1	1.8
POA SPECIES	1	0	1	0	0.5
SITANION HYSTRIX	0	0	1	0	0.3
SUBTOTAL					2.5
SHRUB - PLANTED					
CERATOIDES LANATA	0	1	0	1	0.5
CHRYSOTHAMNUS NAUSEOSUS	0	2	0	0	0.5
SUBTOTAL					1.0
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	0	1	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					36.5
TOTAL INVADED SPECIES					6.3
GRAND TOTAL					42.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	7	7	0	5	4.8
LINUM LEWISII	4	9	7	0	5.0
MELILOTUS OFFICINALIS	9	31	1	23	16.0
SUBTOTAL					25.8
FORB - INVADED					
ASTRAGALUS PURSHII	1	0	0	3	1.0
CHAENACTIS DOUGLASII	0	1	0	0	0.3
IPOMOPSIS AGGREGATA	0	1	0	0	0.3
SUBTOTAL					1.5
GRASS - PLANTED					
AGROPYRON SPECIES	19	9	15	23	16.5
AGROPYRON TRICHOPHORUM	7	12	7	11	9.3
ORYZOPSIS HYMENOIDES	0	0	3	0	0.8
SUBTOTAL					26.5
GRASS - INVADED					
AGROPYRON CRISTATUM	0	0	0	1	0.3
SUBTOTAL					0.3
SHRUB - PLANTED					
ATRIPLEX CANESCENS	0	1	0	0	0.3
CERATOIDES LANATA	1	0	0	1	0.5
PURSHIA TRIDENTATA	0	4	0	0	1.0
SUBTOTAL					1.8
TOTAL PLANTED SPECIES					54.0
TOTAL INVADED SPECIES					1.8
GRAND TOTAL					55.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS				TREATMENT PLOT
	#5	#6	#7	#8	AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	0	0	1	0.3
LINUM LEWISII	16	0	1	5	5.5
SUBTOTAL					5.8
FORB - INVADED					
CHAENACTIS DOUGLASII	1	0	0	0	0.3
HAPLOPAPPUS NUTTALLII	5	2	0	0	1.8
MACHAERANTHERA SPECIES	2	1	0	0	0.8
PHYSARIA FLORIBUNDA	0	1	0	0	0.3
SUBTOTAL					3.0
GRASS - PLANTED					
AGROPYRON SPECIES	16	21	33	21	22.8
AGROPYRON TRICHOPHORUM	0	2	5	6	3.3
STIPA VIRIDULA	1	0	0	0	0.3
SUBTOTAL					26.3
GRASS - INVADED					
BROMUS TECTORUM	4	0	1	0	1.3
SITANION HYSTRIX	0	1	0	0	0.3
STIPA COMATA	2	0	0	1	0.8
SUBTOTAL					2.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	0	3	0.8
CERATOIDES LANATA	0	0	0	1	0.3
CHRYSOTHAMNUS NAUSEOSUS	1	1	2	0	1.0
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	0	1	0.3
SUBTOTAL					2.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	0	1	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					34.3
TOTAL INVADED SPECIES					5.5
GRAND TOTAL					39.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	3	0	2	0	1.3
LINUM LEWISII	0	4	4	0	2.0
MELILOTUS OFFICINALIS	3	0	0	0	0.8
SUBTOTAL					4.0
FORB - INVADED					
IPOMOPSIS AGGREGATA	0	0	0	1	0.3
MACHAERANTHERA SPECIES	0	0	0	3	0.8
PHLOX HOODII	0	0	0	2	0.5
SENECIO MULTILOBATUS	0	0	1	2	0.8
SUBTOTAL					2.3
GRASS - PLANTED					
AGROPYRON SPECIES	20	31	17	29	24.3
AGROPYRON TRICHOPHORUM	4	3	13	2	5.5
ORYZOPSIS HYMENOIDES	0	2	0	0	0.5
STIPA VIRIDULA	3	0	2	0	1.3
SUBTOTAL					31.5
GRASS - INVADED					
BROMUS TECTORUM	2	0	0	0	0.5
SITANION HYSTRIX	0	0	0	1	0.3
SUBTOTAL					0.8
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	2	5	0	0	1.8
CERATOIDES LANATA	8	0	2	0	2.5
CHRYSOTHAMNUS NAUSEOSUS	13	0	0	0	3.3
CHRYSOTHAMNUS VISCIDIFLORUS	1	1	0	0	0.5
SUBTOTAL					8.0
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	4	0	1	1.3
SUBTOTAL					1.3
TOTAL PLANTED SPECIES					43.5
TOTAL INVADED SPECIES					4.3
GRAND TOTAL					47.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
LINUM LEWISII	0	0	4	13	4.3
SUBTOTAL					4.3
FORB - INVADED					
CRYPTANTHA SERICEA	0	0	1	0	0.3
IPOMOPSIS AGGREGATA	1	0	0	1	0.5
SUBTOTAL					0.8
GRASS - PLANTED					
AGROPYRON SPECIES	21	15	9	24	17.3
AGROPYRON TRICHOPHORUM	7	8	6	14	8.8
STIPA VIRIDULA	0	1	0	0	0.3
SUBTOTAL					26.3
GRASS - INVADED					
AGROPYRON CRISTATUM	0	11	13	0	6.0
BROMUS TECTORUM	6	1	4	0	2.8
STIPA COMATA	3	0	0	0	0.8
SUBTOTAL					9.5
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	1	13	10	0	6.0
CERATOIDES LANATA	0	0	3	0	0.8
CHRYSOTHAMNUS NAUSEOSUS	0	1	7	0	2.0
SUBTOTAL					8.8
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	5	0	0	4	2.3
SUBTOTAL					2.3
TOTAL PLANTED SPECIES					39.3
TOTAL INVADED SPECIES					12.5
GRAND TOTAL					51.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-1
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	6	26	24	26	20.5
LINUM LEWISII	0	0	8	13	5.3
MELILOTUS OFFICINALIS	0	1	1	0	0.5
SUBTOTAL					26.3
FORB - INVADED					
ASTRAGALUS PURSHII	1	0	0	0	0.3
CHAENACTIS DOUGLASII	0	0	1	0	0.3
HAPLOPAPPUS NUTTALLII	5	3	0	1	2.3
LUPINUS SPECIES	0	1	0	0	0.3
SENECIO MULTILOBATUS	2	1	0	0	0.8
SUBTOTAL					3.8
GRASS - PLANTED					
AGROPYRON SPECIES	16	15	19	17	16.8
AGROPYRON TRICHOPHORUM	9	11	2	6	7.0
STIPA VIRIDULA	1	3	2	1	1.8
SUBTOTAL					25.5
GRASS - INVADED					
BROMUS TECTORUM	0	0	2	0	0.5
SUBTOTAL					0.5
SHRUB - PLANTED					
CHRYSOTHAMNUS NAUSEOSUS	2	0	4	0	1.5
PURSHIA TRIDENTATA	0	1	0	0	0.3
SUBTOTAL					1.8
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	1	5	0	1	1.8
SUBTOTAL					1.8
TOTAL PLANTED SPECIES					53.5
TOTAL INVADED SPECIES					6.0
GRAND TOTAL					59.5

APPENDIX 6-1.2

Analyses for Plot R-1 Experimental Revegetation Data

Duncan's Multiple Range Test results for significant main effect differences as identified for analyses summarized on Table 6-2. Block and mulch designations are presented on Figure 6-1.

```
                    RIO BLANCO OIL SHALE COMPANY
                    VEGETATION MONITORING PROGRAM
                  EXPERIMENTAL REVEGETATION STUDIES - R1

                     THREE-WAY ANALYSIS OF VARIANCE
               COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
              BETWEEN BLOCKS, MULCHING AND FERTILIZER TREATMENTS
   REPORT YEAR=1982   GROWTH FORM=FORB   PLANTED OR INVADED SPECIES=PLANTED

                    GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=86  MSE=.0041497
HARMONIC MEAN OF CELL SIZES=44.3662

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  BLOCK

                A         0.082276     42  2
                A
      B         A         0.055394     42  1
      B
      B                   0.037557     50  3
```

```
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                         VEGETATION MONITORING PROGRAM
                    EXPERIMENTAL REVEGETATION STUDIES - R1

                        THREE-WAY ANALYSIS OF VARIANCE
                  COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
                BETWEEN BLOCKS, MULCHING AND FERTILIZER TREATMENTS
     REPORT YEAR=1982   GROWTH FORM=FORB   PLANTED OR INVADED SPECIES=INVADED

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=195  MSE=7.6E-05
HARMONIC MEAN OF CELL SIZES=58.9423

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  MULCH

                A         0.0093862      73  3

                B         0.0057722      68  2
                B
                B         0.0052274      55  1
                B
                B         0.0051597      47  4
```

Duncan's Multiple Range Test results for significant main effect differences as identified for analyses summarized on Table 6-3.

```
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                     EXPERIMENTAL REVEGETATION STUDIES - R1

                          ONE-WAY ANALYSIS OF VARIANCE
                 COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
                           BETWEEN ALL YEARS SAMPLED
             GROWTH FORM=GRASS   PLANTED OR INVADED SPECIES=PLANTED

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=1163  MSE=.0019162
HARMONIC MEAN OF CELL SIZES=190.797

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN       N  RPTYR

               A            0.061218     168  1982
               A
       B       A            0.054757     182  1981
       B
       B                    0.050703     175  1980

               C            0.029147     180  1978
               C
               C            0.028506     206  1977

               D            0.011057     258  1976
```

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                          RIO BLANCO OIL SHALE COMPANY
                         VEGETATION MONITORING PROGRAM
                     EXPERIMENTAL REVEGETATION STUDIES - R1

                          ONE-WAY ANALYSIS OF VARIANCE
                 COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
                           BETWEEN ALL YEARS SAMPLED
             GROWTH FORM=GRASS   PLANTED OR INVADED SPECIES=INVADED

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=351  MSE=7.5E-04
HARMONIC MEAN OF CELL SIZES=37.2406

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  RPTYR

               A           0.033844     36  1976
               A
       B       A           0.025361     65  1980
       B
       B                   0.020509     96  1982
       B
       B                   0.017335     98  1981

               C           0.004592     49  1978
               C
               C           0.004038     13  1977
```

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                    RIO BLANCO OIL SHALE COMPANY
                    VEGETATION MONITORING PROGRAM
                EXPERIMENTAL REVEGETATION STUDIES - R1

                     ONE-WAY ANALYSIS OF VARIANCE
               COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
                       BETWEEN ALL YEARS SAMPLED
         GROWTH FORM=FORB   PLANTED OR INVADED SPECIES=PLANTED

                    GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=926  MSE=9.9E-04
HARMONIC MEAN OF CELL SIZES=151.833

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN       N   RPTYR

                A           0.057164     134   1982

                B           0.034161     138   1980
                B
                B           0.031007     164   1981

                C           0.011442     170   1977
                C
                C           0.008757     197   1976
                C
                C           0.006396     129   1978
```

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                      EXPERIMENTAL REVEGETATION STUDIES - R1

                           ONE-WAY ANALYSIS OF VARIANCE
                   COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
                            BETWEEN ALL YEARS SAMPLED
               GROWTH FORM=FORB   PLANTED OR INVADED SPECIES=INVADED

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=1214  MSE=0.005116
HARMONIC MEAN OF CELL SIZES=183.628

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN      N  RPTYR

                A           0.093306    110  1978

                B           0.065087    177  1977

                C           0.029417    168  1976

                D           0.013220    219  1980
                D
                D           0.007088    303  1981
                D
                D           0.006616    243  1982
```

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                         RIO BLANCO OIL SHALE COMPANY
                        VEGETATION MONITORING PROGRAM
                    EXPERIMENTAL REVEGETATION STUDIES - R1

                         ONE-WAY ANALYSIS OF VARIANCE
                 COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
                         BETWEEN ALL YEARS SAMPLED
           GROWTH FORM=SHRUB   PLANTED OR INVADED SPECIES=PLANTED

                       GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=948  MSE=9.2E-05
HARMONIC MEAN OF CELL SIZES=156.372

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN       N  RPTYR

               A          0.012821     165  1982
               A
       B       A          0.011095     128  1980
       B
       B                  0.009834     180  1978
       B
       B                  0.009594     166  1977
       B
       B                  0.009526     137  1981

               C          0.005787     178  1976
```

Duncan's Multiple Range Test results for significant main effect differences as identified for analyses summarized on Table 6-4. Block, mulch and fertilizer designations are presented on Figure 6-1.

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                        RIO BLANCO OIL SHALE COMPANY
                       VEGETATION MONITORING PROGRAM
                   EXPERIMENTAL REVEGETATION STUDIES - R1

                        THREE-WAY ANALYSIS OF VARIANCE
                 COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
               BETWEEN BLOCKS, MULCHING AND FERTILIZER TREATMENTS
                         ,  FOR ALL YEARS SAMPLED
             GROWTH FORM=GRASS   PLANTED OR INVADED SPECIES=PLANTED

                       GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=1121  MSE=.0022464
HARMONIC MEAN OF CELL SIZES=292.185

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  MULCH

                 A        0.042441    295  4
                 A
        B        A        0.038459    285  1
        B        A
        B        A        0.035172    293  2
        B
        B                 0.031447    296  3
```

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                          RIO BLANCO OIL SHALE COMPANY
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                     EXPERIMENTAL REVEGETATION STUDIES - R1

                         THREE-WAY ANALYSIS OF VARIANCE
                 COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
               BETWEEN BLOCKS, MULCHING AND FERTILIZER TREATMENTS
                             FOR ALL YEARS SAMPLED
             GROWTH FORM=GRASS   PLANTED OR INVADED SPECIES=PLANTED

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=1121  MSE=.0022464
HARMONIC MEAN OF CELL SIZES=292.205

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN      N  FERTILIZ

               A            0.042256    298  1
               A
       B       A            0.038433    291  3
       B       A
       B       A            0.036134    292  4
       B
       B                    0.030442    288  2
```

```
                         RIO BLANCO OIL SHALE COMPANY
                        VEGETATION MONITORING PROGRAM
                    EXPERIMENTAL REVEGETATION STUDIES - R1

                         THREE-WAY ANALYSIS OF VARIANCE
                  COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
                BETWEEN BLOCKS, MULCHING AND FERTILIZER TREATMENTS
                              FOR ALL YEARS SAMPLED
            GROWTH FORM=FORB   PLANTED OR INVADED SPECIES=PLANTED

                          GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=884  MSE=.0012512
HARMONIC MEAN OF CELL SIZES=310.462

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING           MEAN      N  BLOCK

               A        0.028607    319  2

               B        0.022009    313  1
               B
               B        0.019800    300  3
```

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                              RIO BLANCO OIL SHALE COMPANY
                             VEGETATION MONITORING PROGRAM
                         EXPERIMENTAL REVEGETATION STUDIES - R1

                              THREE-WAY ANALYSIS OF VARIANCE
                        COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
                      BETWEEN BLOCKS, MULCHING AND FERTILIZER TREATMENTS
                                  FOR ALL YEARS SAMPLED
                   GROWTH FORM=FORB   PLANTED OR INVADED SPECIES=PLANTED

                              GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=884  MSE=.0012512
HARMONIC MEAN OF CELL SIZES=232.352

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  MULCH

               A          0.029701    252  2
               A
       B       A          0.025169    220  1
       B
       B                  0.019903    236  3
       B
       B                  0.018911    224  4
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                        RIO BLANCO OIL SHALE COMPANY
                       VEGETATION MONITORING PROGRAM
                   EXPERIMENTAL REVEGETATION STUDIES - R1

                        THREE-WAY ANALYSIS OF VARIANCE
                 COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
               BETWEEN BLOCKS, MULCHING AND FERTILIZER TREATMENTS
                           FOR ALL YEARS SAMPLED
             GROWTH FORM=SHRUB   PLANTED OR INVADED SPECIES=PLANTED

                       GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=906  MSE=8.8E-05
HARMONIC MEAN OF CELL SIZES=238.105

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN       N  MULCH

                A         0.012480     235  1
                A
                A         0.011385     253  2

                B         0.007501     226  4
                B
                B         0.007188     240  3
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                          RIO BLANCO OIL SHALE COMPANY
                         VEGETATION MONITORING PROGRAM
                     EXPERIMENTAL REVEGETATION STUDIES - R1

                         THREE-WAY ANALYSIS OF VARIANCE
                 COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
               BETWEEN BLOCKS, MULCHING AND FERTILIZER TREATMENTS
                             FOR ALL YEARS SAMPLED
             GROWTH FORM=SHRUB   PLANTED OR INVADED SPECIES=INVADED

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=31  MSE=5.5E-05
HARMONIC MEAN OF CELL SIZES=18.5817

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  FERTILIZ

               A          0.012796     17  2
               A
       B       A          0.010295     17  4
       B
       B                  0.006429     21  1
       B
       B                  0.006251     20  3
```

APPENDIX 6-1.3

Plot R-2 Experimental Revegetation Data

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	4	21	0	0	6.3
LINUM LEWISII	14	6	3	9	8.0
MELILOTUS OFFICINALIS	0	0	1	0	0.3
SUBTOTAL					14.5
FORB - INVADED					
ASTRAGALUS PURSHII	0	0	0	1	0.3
CHAENACTIS DOUGLASII	1	0	1	0	0.5
CRYPTANTHA SERICEA	0	0	1	2	0.8
MACHAERANTHERA CANESCANS	1	0	1	1	0.8
PHYSARIA FLORIBUNDA	0	0	0	1	0.3
SUBTOTAL					2.5
GRASS - PLANTED					
AGROPYRON SPECIES	5	12	2	11	7.5
AGROPYRON TRICHOPHORUM	0	3	0	0	0.8
ORYZOPSIS HYMENOIDES	1	0	24	0	6.3
SUBTOTAL					14.5
GRASS - INVADED					
SITANION HYSTRIX	0	0	3	1	1.0
STIPA COMATA	2	0	0	0	0.5
SUBTOTAL					1.5
SHRUB - PLANTED					
CERATOIDES LANATA	2	0	0	0	0.5
CHRYSOTHAMNUS NAUSEOSUS	1	4	1	1	1.8
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	0	1	0.3
PURSHIA TRIDENTATA	11	1	0	0	3.0
SUBTOTAL					5.5
TOTAL PLANTED SPECIES					34.5
TOTAL INVADED SPECIES					4.0
GRAND TOTAL					38.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	9	12	0	28	12.3
LINUM LEWISII	2	6	0	0	2.0
SUBTOTAL					14.3
FORB - INVADED					
CHAENACTIS DOUGLASII	0	0	0	1	0.3
MACHAERANTHERA CANESCANS	1	2	1	2	1.5
PHLOX HOODII	0	0	3	0	0.8
SUBTOTAL					2.5
GRASS - PLANTED					
AGROPYRON SPECIES	9	9	8	6	8.0
AGROPYRON TRICHOPHORUM	4	2	3	8	4.3
ORYZOPSIS HYMENOIDES	0	0	1	9	2.5
SUBTOTAL					14.8
GRASS - INVADED					
SITANION HYSTRIX	0	0	2	0	0.5
SUBTOTAL					0.5
SHRUB - PLANTED					
CERATOIDES LANATA	0	2	0	0	0.5
CHRYSOTHAMNUS NAUSEOSUS	17	18	0	1	9.0
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	17	1	4.5
PURSHIA TRIDENTATA	5	6	0	0	2.8
SUBTOTAL					16.8
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	1	0	1	3	1.3
SUBTOTAL					1.3
TOTAL PLANTED SPECIES					45.8
TOTAL INVADED SPECIES					4.3
GRAND TOTAL					50.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	4	3	0	0	1.8
LINUM LEWISII	0	1	12	1	3.5
MELILOTUS OFFICINALIS	0	0	0	3	0.8
SUBTOTAL					6.0
FORB - INVADED					
ASTER SPECIES	0	0	0	1	0.3
CHAENACTIS DOUGLASII	1	0	0	1	0.5
CRYPTANTHA SERICEA	1	0	3	1	1.3
MACHAERANTHERA CANESCANS	3	3	1	1	2.0
SENECIO MULTILOBATUS	0	1	1	0	0.5
SUBTOTAL					4.5
GRASS - PLANTED					
AGROPYRON SPECIES	0	9	3	7	4.8
AGROPYRON TRICHOPHORUM	0	0	0	3	0.8
ELYMUS CINEREUS	1	0	0	0	0.3
ORYZOPSIS HYMENOIDES	9	0	3	0	3.0
SUBTOTAL					8.8
GRASS - INVADED					
SITANION HYSTRIX	3	0	0	0	0.8
SUBTOTAL					0.8
SHRUB - PLANTED					
CERATOIDES LANATA	1	0	0	0	0.3
CHRYSOTHAMNUS NAUSEOSUS	1	5	1	6	3.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	3	1	0	1.0
SUBTOTAL					4.5
TOTAL PLANTED SPECIES					19.3
TOTAL INVADED SPECIES					5.3
GRAND TOTAL					24.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	3	26	28	3	15.0
LINUM LEWISII	0	1	1	0	0.5
MELILOTUS OFFICINALIS	0	0	1	0	0.3
SUBTOTAL					15.8
FORB - INVADED					
CHAENACTIS DOUGLASII	1	0	1	0	0.5
MACHAERANTHERA CANESCANS	0	0	1	0	0.3
PHYSARIA FLORIBUNDA	1	0	0	0	0.3
SENECIO MULTILOBATUS	0	1	0	0	0.3
SUBTOTAL					1.3
GRASS - PLANTED					
AGROPYRON SPECIES	1	4	11	2	4.5
AGROPYRON TRICHOPHORUM	3	6	3	0	3.0
ORYZOPSIS HYMENOIDES	7	0	2	16	6.3
SUBTOTAL					13.8
GRASS - INVADED					
STIPA COMATA	0	0	0	0	0.0
SUBTOTAL					0.0
SHRUB - PLANTED					
CERATOIDES LANATA	0	2	0	0	0.5
CHRYSOTHAMNUS NAUSEOSUS	13	2	1	0	4.0
CHRYSOTHAMNUS VISCIDIFLORUS	1	0	2	5	2.0
PURSHIA TRIDENTATA	4	16	0	0	5.0
SUBTOTAL					11.5
TOTAL PLANTED SPECIES					41.0
TOTAL INVADED SPECIES					1.3
GRAND TOTAL					42.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	6	0	9	1	4.0
LINUM LEWISII	3	3	3	2	2.8
MELILOTUS OFFICINALIS	0	1	0	0	0.3
SUBTOTAL					7.0
FORB - INVADED					
CRYPTANTHA SERICEA	1	0	0	2	0.8
MACHAERANTHERA CANESCANS	1	0	1	1	0.8
SUBTOTAL					1.5
GRASS - PLANTED					
AGROPYRON SPECIES	12	7	4	3	6.5
AGROPYRON TRICHOPHORUM	1	0	0	1	0.5
ORYZOPSIS HYMENOIDES	4	6	14	3	6.8
SUBTOTAL					13.8
GRASS - INVADED					
AGROPYRON CRISTATUM	1	0	0	0	0.3
SITANION HYSTRIX	0	0	1	1	0.5
SUBTOTAL					0.8
SHRUB - PLANTED					
CHRYSOTHAMNUS NAUSEOSUS	1	6	3	2	3.0
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	4	6	2.5
PURSHIA TRIDENTATA	1	4	0	0	1.3
SUBTOTAL					6.8
TOTAL PLANTED SPECIES					27.5
TOTAL INVADED SPECIES					2.3
GRAND TOTAL					29.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	9	0	3	3.0
LINUM LEWISII	1	2	0	2	1.3
MELILOTUS OFFICINALIS	0	0	1	0	0.3
SUBTOTAL					4.5
FORB - INVADED					
CHAENACTIS DOUGLASII	1	2	0	0	0.8
CRYPTANTHA SERICEA	0	0	0	1	0.3
SUBTOTAL					1.0
GRASS - PLANTED					
AGROPYRON SPECIES	3	5	4	8	5.0
AGROPYRON TRICHOPHORUM	0	0	5	0	1.3
ORYZOPSIS HYMENOIDES	22	4	3	2	7.8
SUBTOTAL					14.0
SHRUB - PLANTED					
ATRIPLEX CANESCENS	0	0	0	14	3.5
CHRYSOTHAMNUS NAUSEOSUS	0	0	4	0	1.0
CHRYSOTHAMNUS VISCIDIFLORUS	9	18	5	8	10.0
PURSHIA TRIDENTATA	0	0	0	5	1.3
SUBTOTAL					15.8
TOTAL PLANTED SPECIES					34.3
TOTAL INVADED SPECIES					1.0
GRAND TOTAL					35.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	1	17	0	0	4.5
LINUM LEWISII	4	2	0	0	1.5
SUBTOTAL					6.0
FORB - INVADED					
CHAENACTIS DOUGLASII	1	0	2	1	1.0
CRUCIFERAE SPECIES	0	2	0	0	0.5
MACHAERANTHERA CANESCANS	0	1	0	1	0.5
PHLOX HOODII	1	0	0	0	0.3
SENECIO MULTILOBATUS	0	0	0	1	0.3
SUBTOTAL					2.5
GRASS - PLANTED					
AGROPYRON SPECIES	9	7	0	1	4.3
AGROPYRON TRICHOPHORUM	2	5	0	0	1.8
ORYZOPSIS HYMENOIDES	13	0	4	8	6.3
SUBTOTAL					12.3
GRASS - INVADED					
SITANION HYSTRIX	0	0	1	0	0.3
STIPA COMATA	0	3	2	4	2.3
SUBTOTAL					2.5
SHRUB - PLANTED					
CERATOIDES LANATA	0	2	0	1	0.8
CHRYSOTHAMNUS NAUSEOSUS	1	0	13	11	6.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	0	1	0.3
SUBTOTAL					7.3
TOTAL PLANTED SPECIES					25.5
TOTAL INVADED SPECIES					5.0
GRAND TOTAL					30.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
LINUM LEWISII	11	3	4	1	4.8
MELILOTUS OFFICINALIS	0	0	1	0	0.3
SUBTOTAL					5.0
FORB - INVADED					
CHAENACTIS DOUGLASII	1	1	1	0	0.8
CRYPTANTHA SERICEA	0	0	1	1	0.5
MACHAERANTHERA CANESCANS	0	14	0	0	3.5
SENECIO MULTILOBATUS	1	0	1	0	0.5
SUBTOTAL					5.3
GRASS - PLANTED					
AGROPYRON SPECIES	1	0	2	13	4.0
ORYZOPSIS HYMENOIDES	23	4	3	1	7.8
STIPA VIRIDULA	0	0	1	0	0.3
SUBTOTAL					12.0
GRASS - INVADED					
SITANION HYSTRIX	0	2	0	0	0.5
SUBTOTAL					0.5
SHRUB - PLANTED					
CHRYSOTHAMNUS NAUSEOSUS	0	1	4	3	2.0
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	0	11	2.8
SUBTOTAL					4.8
TOTAL PLANTED SPECIES					21.8
TOTAL INVADED SPECIES					5.8
GRAND TOTAL					27.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	1	0	0	0	0.3
LINUM LEWISII	0	0	5	8	3.3
SUBTOTAL					3.5
FORB - INVADED					
CRYPTANTHA SERICEA	0	1	1	0	0.5
MACHAERANTHERA CANESCANS	1	0	0	0	0.3
SENECIO MULTILOBATUS	0	0	2	0	0.5
SUBTOTAL					1.3
GRASS - PLANTED					
AGROPYRON SPECIES	17	0	3	8	7.0
AGROPYRON TRICHOPHORUM	4	0	0	0	1.0
ORYZOPSIS HYMENOIDES	0	7	11	1	4.8
SUBTOTAL					12.8
GRASS - INVADED					
STIPA COMATA	0	0	0	2	0.5
SUBTOTAL					0.5
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	2	1	0	2	1.3
CHRYSOTHAMNUS NAUSEOSUS	28	4	5	1	9.5
CHRYSOTHAMNUS VISCIDIFLORUS	1	12	0	3	4.0
SUBTOTAL					14.8
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	1	0	0	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					31.0
TOTAL INVADED SPECIES					2.0
GRAND TOTAL					33.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
LINUM LEWISII	0	4	2	0	1.5
SUBTOTAL					1.5
FORB - INVADED					
CHAENACTIS DOUGLASII	1	0	1	3	1.3
CRYPTANTHA SERICEA	0	0	0	3	0.8
MACHAERANTHERA SPECIES	0	0	0	1	0.3
SUBTOTAL					2.3
GRASS - PLANTED					
AGROPYRON SPECIES	7	4	4	1	4.0
AGROPYRON TRICHOPHORUM	5	1	0	0	1.5
ORYZOPSIS HYMENOIDES	2	3	16	0	5.3
SUBTOTAL					10.8
GRASS - INVADED					
SITANION HYSTRIX	3	0	0	3	1.5
STIPA COMATA	0	7	4	0	2.8
SUBTOTAL					4.3
SHRUB - PLANTED					
CERATOIDES LANATA	2	1	2	1	1.5
CHRYSOTHAMNUS NAUSEOSUS	1	0	0	3	1.0
CHRYSOTHAMNUS VISCIDIFLORUS	3	5	3	16	6.8
PURSHIA TRIDENTATA	2	0	0	0	0.5
SUBTOTAL					9.8
TOTAL PLANTED SPECIES					22.0
TOTAL INVADED SPECIES					6.5
GRAND TOTAL					28.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	0	6	0	0	1.5
LINUM LEWISII	0	0	0	4	1.0
SUBTOTAL					2.5
FORB - INVADED					
CHAENACTIS DOUGLASII	1	0	0	0	0.3
MACHAERANTHERA CANESCANS	1	0	2	0	0.8
SUBTOTAL					1.0
GRASS - PLANTED					
AGROPYRON SPECIES	7	12	16	8	10.8
AGROPYRON TRICHOPHORUM	0	4	0	1	1.3
ELYMUS CINEREUS	3	0	0	0	0.8
ORYZOPSIS HYMENOIDES	7	0	1	0	2.0
STIPA VIRIDULA	2	0	0	0	0.5
SUBTOTAL					15.3
GRASS - INVADED					
AGROPYRON CRISTATUM	0	2	0	0	0.5
BROMUS TECTORUM	0	0	1	0	0.3
SUBTOTAL					0.8
SHRUB - PLANTED					
CERATOIDES LANATA	0	0	0	3	0.8
CHRYSOTHAMNUS NAUSEOSUS	3	47	3	7	15.0
CHRYSOTHAMNUS VISCIDIFLORUS	6	0	0	3	2.3
SUBTOTAL					18.0
TOTAL PLANTED SPECIES					35.8
TOTAL INVADED SPECIES					1.8
GRAND TOTAL					37.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= NO MULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	1	0	0	51	13.0
LINUM LEWISII	3	0	0	0	0.8
SUBTOTAL					13.8
FORB - INVADED					
CRUCIFERAE SPECIES	1	0	0	0	0.3
CRYPTANTHA SERICEA	0	1	4	0	1.3
SENECIO MULTILOBATUS	0	0	1	0	0.3
SUBTOTAL					1.8
GRASS - PLANTED					
AGROPYRON SPECIES	1	3	4	6	3.5
AGROPYRON TRICHOPHORUM	0	0	0	1	0.3
ORYZOPSIS HYMENOIDES	0	7	1	9	4.3
STIPA VIRIDULA	0	0	3	2	1.3
SUBTOTAL					9.3
GRASS - INVADED					
SITANION HYSTRIX	0	4	3	0	1.8
SUBTOTAL					1.8
SHRUB - PLANTED					
CERATOIDES LANATA	0	0	3	0	0.8
CHRYSOTHAMNUS VISCIDIFLORUS	24	23	8	0	13.8
PURSHIA TRIDENTATA	0	0	0	3	0.8
SUBTOTAL					15.3
TOTAL PLANTED SPECIES					38.3
TOTAL INVADED SPECIES					3.5
GRAND TOTAL					41.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
LINUM LEWISII	11	1	0	2	3.5
MELILOTUS OFFICINALIS	0	0	0	1	0.3
SUBTOTAL					3.8
FORB - INVADED					
CHAENACTIS DOUGLASII	0	1	2	1	1.0
CRYPTANTHA SERICEA	1	2	1	1	1.3
IPOMOPSIS AGGREGATA	1	0	1	1	0.8
SUBTOTAL					3.0
GRASS - PLANTED					
AGROPYRON SPECIES	0	0	3	12	3.8
ORYZOPSIS HYMENOIDES	6	3	14	0	5.8
SUBTOTAL					9.5
GRASS - INVADED					
STIPA COMATA	0	4	0	0	1.0
SUBTOTAL					1.0
SHRUB - PLANTED					
CHRYSOTHAMNUS NAUSEOSUS	28	1	5	2	9.0
SUBTOTAL					9.0
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	1	21	1	0	5.8
SUBTOTAL					5.8
TOTAL PLANTED SPECIES					22.3
TOTAL INVADED SPECIES					9.8
GRAND TOTAL					32.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	42	32	39	8	30.3
LINUM LEWISII	0	3	0	0	0.8
SUBTOTAL					31.0
FORB - INVADED					
GUTIERREZIA SAROTHRAE	2	0	0	2	1.0
SENECIO MULTILOBATUS	0	1	0	0	0.3
SUBTOTAL					1.3
GRASS - PLANTED					
AGROPYRON SPECIES	4	9	4	6	5.8
AGROPYRON TRICHOPHORUM	3	2	1	3	2.3
ELYMUS CINEREUS	0	0	0	1	0.3
ORYZOPSIS HYMENOIDES	3	0	11	2	4.0
STIPA VIRIDULA	0	0	0	2	0.5
SUBTOTAL					12.8
SHRUB - PLANTED					
ATRIPLEX CANESCENS	0	3	0	0	0.8
CHRYSOTHAMNUS NAUSEOSUS	6	6	0	9	5.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	3	0	0	0.8
PURSHIA TRIDENTATA	3	1	4	0	2.0
SUBTOTAL					8.8
TOTAL PLANTED SPECIES					52.5
TOTAL INVADED SPECIES					1.3
GRAND TOTAL					53.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	3	2	1	2	2.0
LINUM LEWISII	1	1	1	1	1.0
SUBTOTAL					3.0
FORB - INVADED					
CRYPTANTHA SERICEA	0	1	1	0	0.5
MACHAERANTHERA CANESCANS	0	1	0	0	0.3
SUBTOTAL					0.8
GRASS - PLANTED					
AGROPYRON SPECIES	5	0	5	12	5.5
AGROPYRON TRICHOPHORUM	1	0	2	0	0.8
ELYMUS CINEREUS	0	2	0	0	0.5
ORYZOPSIS HYMENOIDES	19	7	3	4	8.3
SUBTOTAL					15.0
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	13	0	0	3.3
CERATOIDES LANATA	0	0	0	1	0.3
CHRYSOTHAMNUS NAUSEOSUS	6	1	7	8	5.5
CHRYSOTHAMNUS VISCIDIFLORUS	14	0	0	16	7.5
PURSHIA TRIDENTATA	14	0	1	17	8.0
SUBTOTAL					24.5
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	2	0	0.5
SUBTOTAL					0.5
TOTAL PLANTED SPECIES					42.5
TOTAL INVADED SPECIES					1.3
GRAND TOTAL					43.8

APPENDIX • PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
LINUM LEWISII	1	0	1	0	0.5
MELILOTUS OFFICINALIS	0	1	1	1	0.8
SUBTOTAL					1.3
FORB - INVADED					
CHAENACTIS DOUGLASII	0	1	1	1	0.8
CRYPTANTHA SERICEA	4	1	0	1	1.5
MACHAERANTHERA CANESCANS	0	0	2	1	0.8
PHLOX HOODII	0	0	0	3	0.8
SUBTOTAL					3.8
GRASS - PLANTED					
AGROPYRON SPECIES	6	11	1	4	5.5
ORYZOPSIS HYMENOIDES	2	1	12	12	6.8
SUBTOTAL					12.3
GRASS - INVADED					
STIPA COMATA	0	2	9	0	2.8
SUBTOTAL					2.8
SHRUB - PLANTED					
CERCOCARPUS MONTANUS	0	1	0	0	0.3
CHRYSOTHAMNUS NAUSEOSUS	0	36	4	0	10.0
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	0	3	0.8
SUBTOTAL					11.0
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	2	1	0.8
SUBTOTAL					0.8
TOTAL PLANTED SPECIES					24.5
TOTAL INVADED SPECIES					7.3
GRAND TOTAL					31.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	1	0	17	0	4.5
LINUM LEWISII	6	3	2	1	3.0
SUBTOTAL					7.5
FORB - INVADED					
CHAENACTIS DOUGLASII	1	1	1	0	0.8
CRUCIFERAE SPECIES	0	1	1	0	0.5
CRYPTANTHA SERICEA	0	4	0	0	1.0
MACHAERANTHERA CANESCANS	0	5	0	0	1.3
SUBTOTAL					3.5
GRASS - PLANTED					
AGROPYRON SPECIES	9	0	3	12	6.0
AGROPYRON TRICHOPHORUM	2	0	0	1	0.8
ELYMUS CINEREUS	4	0	0	0	1.0
ORYZOPSIS HYMENOIDES	0	3	0	3	1.5
STIPA VIRIDULA	2	0	0	0	0.5
SUBTOTAL					9.8
GRASS - INVADED					
AGROPYRON CRISTATUM	0	0	2	0	0.5
SUBTOTAL					0.5
SHRUB - PLANTED					
ATRIPLEX CANESCENS	0	0	0	1	0.3
CERATOIDES LANATA	0	0	0	2	0.5
CHRYSOTHAMNUS NAUSEOSUS	0	0	1	19	5.0
CHRYSOTHAMNUS VISCIDIFLORUS	1	2	2	0	1.3
SUBTOTAL					7.0
TOTAL PLANTED SPECIES					24.3
TOTAL INVADED SPECIES					4.0
GRAND TOTAL					28.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	8	26	4	0	9.5
LINUM LEWISII	2	3	0	1	1.5
SUBTOTAL					11.0
FORB - INVADED					
ASTRAGALUS PURSHII	0	0	1	0	0.3
CHAENACTIS DOUGLASII	1	0	1	0	0.5
MACHAERANTHERA CANESCANS	1	0	1	0	0.5
SUBTOTAL					1.3
GRASS - PLANTED					
AGROPYRON SPECIES	3	7	12	7	7.3
AGROPYRON TRICHOPHORUM	1	7	2	0	2.5
ELYMUS CINEREUS	0	1	0	0	0.3
ORYZOPSIS HYMENOIDES	6	0	8	7	5.3
SUBTOTAL					15.3
GRASS - INVADED					
AGROPYRON CRISTATUM	0	0	1	0	0.3
POA SPECIES	0	0	0	1	0.3
SUBTOTAL					0.5
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	8	0	2.0
CHRYSOTHAMNUS NAUSEOSUS	7	23	11	7	12.0
CHRYSOTHAMNUS VISCIDIFLORUS	3	2	0	0	1.3
PURSHIA TRIDENTATA	9	11	0	0	5.0
SUBTOTAL					20.3
TOTAL PLANTED SPECIES					46.5
TOTAL INVADED SPECIES					1.8
GRAND TOTAL					48.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	24	0	0	0	6.0
LINUM LEWISII	11	4	3	4	5.5
MELILOTUS OFFICINALIS	0	1	0	0	0.3
SUBTOTAL					11.8
FORB - INVADED					
CRYPTANTHA SERICEA	0	0	0	1	0.3
MACHAERANTHERA CANESCANS	1	2	0	0	0.8
PHYSARIA FLORIBUNDA	0	0	1	0	0.3
SENECIO MULTILOBATUS	0	1	1	0	0.5
SUBTOTAL					1.8
GRASS - PLANTED					
AGROPYRON SPECIES	1	1	3	1	1.5
AGROPYRON TRICHOPHORUM	0	0	1	0	0.3
ORYZOPSIS HYMENOIDES	0	5	0	8	3.3
SUBTOTAL					5.0
GRASS - INVADED					
SITANION HYSTRIX	0	3	0	0	0.8
STIPA COMATA	0	4	21	5	7.5
SUBTOTAL					8.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	3	1	1.0
CERATOIDES LANATA	0	0	1	0	0.3
CHRYSOTHAMNUS NAUSEOSUS	8	0	0	1	2.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	1	1	1	0.8
SUBTOTAL					4.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	4	2	1	1.8
SUBTOTAL					1.8
TOTAL PLANTED SPECIES					21.0
TOTAL INVADED SPECIES					11.8
GRAND TOTAL					32.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	13	0	0	8	5.3
LINUM LEWISII	4	4	4	1	3.3
MELILOTUS OFFICINALIS	0	1	1	1	0.8
SUBTOTAL					9.3
FORB - INVADED					
CHAENACTIS DOUGLASII	1	0	0	0	0.3
MACHAERANTHERA CANESCANS	0	2	2	2	1.5
SENECIO MULTILOBATUS	0	1	1	0	0.5
SUBTOTAL					2.3
GRASS - PLANTED					
AGROPYRON SPECIES	8	0	0	6	3.5
AGROPYRON TRICHOPHORUM	1	0	0	3	1.0
ELYMUS CINEREUS	0	0	4	0	1.0
ORYZOPSIS HYMENOIDES	0	0	8	0	2.0
STIPA VIRIDULA	0	0	0	2	0.5
SUBTOTAL					8.0
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	3	0	0	0	0.8
CHRYSOTHAMNUS NAUSEOSUS	0	2	2	0	1.0
CHRYSOTHAMNUS VISCIDIFLORUS	4	3	1	19	6.8
PURSHIA TRIDENTATA	0	0	6	0	1.5
SUBTOTAL					10.0
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	1	0	1	0.5
SUBTOTAL					0.5
TOTAL PLANTED SPECIES					27.3
TOTAL INVADED SPECIES					2.8
GRAND TOTAL					30.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	4	2	0	1	1.8
SUBTOTAL					1.8
FORB - INVADED					
CRYPTANTHA SERICEA	0	1	0	0	0.3
MACHAERANTHERA CANESCANS	1	0	0	0	0.3
PHLOX HOODII	0	0	5	0	1.3
UNKNOWN FORB	0	0	1	0	0.3
SUBTOTAL					2.0
GRASS - PLANTED					
AGROPYRON SPECIES	5	5	2	9	5.3
AGROPYRON TRICHOPHORUM	1	0	0	0	0.3
ORYZOPSIS HYMENOIDES	16	3	26	13	14.5
STIPA VIRIDULA	1	0	0	0	0.3
SUBTOTAL					20.3
GRASS - INVADED					
STIPA COMATA	0	2	0	0	0.5
SUBTOTAL					0.5
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	2	0	0	0	0.5
CHRYSOTHAMNUS NAUSEOSUS	0	13	35	9	14.3
CHRYSOTHAMNUS VISCIDIFLORUS	29	1	0	0	7.5
PURSHIA TRIDENTATA	0	7	0	1	2.0
SUBTOTAL					24.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	1	1	0	0.5
SUBTOTAL					0.5
TOTAL PLANTED SPECIES					46.3
TOTAL INVADED SPECIES					3.0
GRAND TOTAL					49.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-2

REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	0	29	0	4	8.3
LINUM LEWISII	2	5	1	3	2.8
SUBTOTAL					11.0
FORB - INVADED					
ASTRAGALUS PURSHII	1	0	0	0	0.3
CHAENACTIS DOUGLASII	1	0	0	1	0.5
IPOMOPSIS AGGREGATA	1	0	0	0	0.3
MACHAERANTHERA SPECIES	0	1	1	0	0.5
SENECIO MULTILOBATUS	0	0	1	0	0.3
SUBTOTAL					1.8
GRASS - PLANTED					
AGROPYRON SPECIES	10	4	6	0	5.0
AGROPYRON TRICHOPHORUM	2	1	1	0	1.0
ORYZOPSIS HYMENOIDES	3	0	4	14	5.3
SUBTOTAL					11.3
GRASS - INVADED					
AGROPYRON CRISTATUM	0	2	0	3	1.3
BROMUS TECTORUM	0	0	1	0	0.3
SITANION HYSTRIX	0	0	3	1	1.0
STIPA COMATA	0	4	19	15	9.5
SUBTOTAL					12.0
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	1	1	0	0.5
CERATOIDES LANATA	2	0	0	0	0.5
CHRYSOTHAMNUS NAUSEOSUS	0	34	0	0	8.5
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	2	2	1.0
SUBTOTAL					10.5
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	4	0	0	1.0
SUBTOTAL					1.0
TOTAL PLANTED SPECIES					32.8
TOTAL INVADED SPECIES					14.8
GRAND TOTAL					47.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	24	0	0	27	12.8
LINUM LEWISII	0	2	5	1	2.0
MELILOTUS OFFICINALIS	0	2	0	0	0.5
SUBTOTAL					15.3
FORB - INVADED					
CHAENACTIS DOUGLASII	1	1	1	0	0.8
CRYPTANTHA SERICEA	0	0	1	0	0.3
MACHAERANTHERA CANESCANS	2	0	0	0	0.5
SENECIO MULTILOBATUS	0	1	1	0	0.5
SUBTOTAL					2.0
GRASS - PLANTED					
AGROPYRON SPECIES	6	0	7	10	5.8
AGROPYRON TRICHOPHORUM	4	0	1	4	2.3
ORYZOPSIS HYMENOIDES	1	12	5	0	4.5
STIPA VIRIDULA	0	0	0	1	0.3
SUBTOTAL					12.8
GRASS - INVADED					
AGROPYRON CRISTATUM	0	0	0	3	0.8
STIPA COMATA	2	0	0	0	0.5
SUBTOTAL					1.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	1	0	0.3
CHRYSOTHAMNUS NAUSEOSUS	5	1	1	0	1.8
CHRYSOTHAMNUS VISCIDIFLORUS	0	8	0	0	2.0
PURSHIA TRIDENTATA	2	0	0	0	0.5
SUBTOTAL					4.5
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	1	0	0	0	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					32.5
TOTAL INVADED SPECIES					3.5
GRAND TOTAL					36.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= HYDROMULCH
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	0	0	0	18	4.5
LINUM LEWISII	3	3	0	0	1.5
MELILOTUS OFFICINALIS	0	0	2	3	1.3
SUBTOTAL					7.3
FORB - INVADED					
MACHAERANTHERA CANESCANS	5	3	2	1	2.8
PHYSARIA FLORIBUNDA	0	1	1	0	0.5
SENECIO MULTILOBATUS	0	1	0	1	0.5
SUBTOTAL					3.8
GRASS - PLANTED					
AGROPYRON SPECIES	0	0	14	0	3.5
ELYMUS CINEREUS	0	0	3	0	0.8
ORYZOPSIS HYMENOIDES	11	6	4	2	5.8
STIPA VIRIDULA	0	0	0	4	1.0
SUBTOTAL					11.0
GRASS - INVADED					
STIPA COMATA	0	0	0	2	0.5
SUBTOTAL					0.5
SHRUB - PLANTED					
CERATOIDES LANATA	1	0	0	0	0.3
CHRYSOTHAMNUS NAUSEOSUS	2	8	0	1	2.8
CHRYSOTHAMNUS VISCIDIFLORUS	1	0	1	2	1.0
PURSHIA TRIDENTATA	0	0	0	8	2.0
SUBTOTAL					6.0
TOTAL PLANTED SPECIES					24.3
TOTAL INVADED SPECIES					4.3
GRAND TOTAL					28.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	12	16	12	7	11.8
LINUM LEWISII	0	11	6	4	5.3
SUBTOTAL					17.0
FORB - INVADED					
CHAENACTIS DOUGLASII	0	1	0	0	0.3
CRYPTANTHA SERICEA	0	1	0	1	0.5
MACHAERANTHERA CANESCANS	0	0	1	0	0.3
PHYSARIA FLORIBUNDA	0	1	0	0	0.3
SENECIO MULTILOBATUS	0	0	1	0	0.3
SUBTOTAL					1.5
GRASS - PLANTED					
AGROPYRON SPECIES	8	2	0	3	3.3
AGROPYRON TRICHOPHORUM	4	0	0	0	1.0
ELYMUS CINEREUS	0	0	1	0	0.3
ORYZOPSIS HYMENOIDES	3	1	4	14	5.5
STIPA VIRIDULA	1	1	3	0	1.3
SUBTOTAL					11.3
GRASS - INVADED					
STIPA COMATA	0	0	3	2	1.3
SUBTOTAL					1.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	3	0	0	0	0.8
ATRIPLEX CANESCENS	0	5	0	0	1.3
CERATOIDES LANATA	0	0	2	0	0.5
CHRYSOTHAMNUS NAUSEOSUS	4	1	0	0	1.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	3	0	0.8
PURSHIA TRIDENTATA	0	2	9	0	2.8
SUBTOTAL					7.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	1	2	3	6	3.0
SUBTOTAL					3.0
TOTAL PLANTED SPECIES					35.5
TOTAL INVADED SPECIES					5.8
GRAND TOTAL					41.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	26	39	0	33	24.5
LINUM LEWISII	4	1	2	3	2.5
SUBTOTAL					27.0
FORB - INVADED					
CHAENACTIS DOUGLASII	0	1	0	0	0.3
MACHAERANTHERA CANESCANS	0	1	0	0	0.3
PHYSARIA FLORIBUNDA	0	0	0	1	0.3
SUBTOTAL					0.8
GRASS - PLANTED					
AGROPYRON SPECIES	9	3	1	18	7.8
AGROPYRON TRICHOPHORUM	2	2	0	0	1.0
ORYZOPSIS HYMENOIDES	3	8	34	7	13.0
SUBTOTAL					21.8
GRASS - INVADED					
AGROPYRON CRISTATUM	0	0	0	3	0.8
SUBTOTAL					0.8
SHRUB - PLANTED					
CHRYSOTHAMNUS NAUSEOSUS	0	0	1	1	0.5
CHRYSOTHAMNUS VISCIDIFLORUS	11	0	0	0	2.8
PURSHIA TRIDENTATA	4	0	0	0	1.0
SUBTOTAL					4.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	8	0	2.0
SUBTOTAL					2.0
TOTAL PLANTED SPECIES					53.0
TOTAL INVADED SPECIES					3.5
GRAND TOTAL					56.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	0	5	0	32	9.3
LINUM LEWISII	0	0	2	4	1.5
MELILOTUS OFFICINALIS	3	0	1	0	1.0
SUBTOTAL					11.8
FORB - INVADED					
CHAENACTIS DOUGLASII	0	0	1	0	0.3
CRYPTANTHA SERICEA	0	0	1	0	0.3
MACHAERANTHERA CANESCANS	0	1	0	0	0.3
SENECIO MULTILOBATUS	1	0	0	0	0.3
SUBTOTAL					1.0
GRASS - PLANTED					
AGROPYRON SPECIES	2	4	7	9	5.5
AGROPYRON TRICHOPHORUM	0	0	2	3	1.3
ORYZOPSIS HYMENOIDES	7	7	3	3	5.0
SUBTOTAL					11.8
GRASS - INVADED					
BROMUS TECTORUM	0	0	1	0	0.3
STIPA COMATA	2	0	0	0	0.5
SUBTOTAL					0.8
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	2	0	0.5
CERATOIDES LANATA	0	0	1	0	0.3
CHRYSOTHAMNUS NAUSEOSUS	0	12	7	8	6.8
CHRYSOTHAMNUS VISCIDIFLORUS	24	3	0	0	6.8
RHUS TRILOBATA	1	0	0	0	0.3
SUBTOTAL					14.5
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	1	0	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					38.0
TOTAL INVADED SPECIES					2.0
GRAND TOTAL					40.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	0	6	0	0	1.5
LINUM LEWISII	3	1	3	6	3.3
SUBTOTAL					4.8
FORB - INVADED					
CHAENACTIS DOUGLASII	1	2	0	0	0.8
CRYPTANTHA SERICEA	2	0	1	0	0.8
IPOMOPSIS AGGREGATA	0	0	0	2	0.5
MACHAERANTHERA CANESCANS	1	0	0	0	0.3
SENECIO MULTILOBATUS	0	1	1	1	0.8
SUBTOTAL					3.0
GRASS - PLANTED					
AGROPYRON SPECIES	4	3	2	3	3.0
AGROPYRON TRICHOPHORUM	6	7	0	0	3.3
ORYZOPSIS HYMENOIDES	7	13	4	15	9.8
SUBTOTAL					16.0
GRASS - INVADED					
STIPA COMATA	2	0	2	0	1.0
SUBTOTAL					1.0
SHRUB - PLANTED					
CHRYSOTHAMNUS NAUSEOSUS	0	0	3	0	0.8
CHRYSOTHAMNUS VISCIDIFLORUS	1	0	0	0	0.3
PURSHIA TRIDENTATA	0	15	0	0	3.8
SUBTOTAL					4.8
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	4	3	8	2	4.3
SUBTOTAL					4.3
TOTAL PLANTED SPECIES					25.5
TOTAL INVADED SPECIES					8.3
GRAND TOTAL					33.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	29	11	7	11.8
LINUM LEWISII	1	5	0	2	2.0
SUBTOTAL					13.8
FORB - INVADED					
SENECIO MULTILOBATUS	0	1	0	0	0.3
SUBTOTAL					0.3
GRASS - PLANTED					
AGROPYRON SPECIES	3	7	4	4	4.5
AGROPYRON TRICHOPHORUM	0	6	4	2	3.0
ELYMUS CINEREUS	0	0	3	2	1.3
ORYZOPSIS HYMENOIDES	13	2	4	8	6.8
STIPA VIRIDULA	0	0	2	1	0.8
SUBTOTAL					16.3
SHRUB - PLANTED					
CERATOIDES LANATA	0	0	0	1	0.3
CHRYSOTHAMNUS NAUSEOSUS	6	0	33	27	16.5
PURSHIA TRIDENTATA	0	0	7	5	3.0
SUBTOTAL					19.8
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	0	2	0.5
SUBTOTAL					0.5
TOTAL PLANTED SPECIES					49.8
TOTAL INVADED SPECIES					0.8
GRAND TOTAL					50.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	12	23	0	33	17.0
LINUM LEWISII	3	1	0	1	1.3
SUBTOTAL					18.3
FORB - INVADED					
CHAENACTIS DOUGLASII	0	1	0	0	0.3
CRYPTANTHA SERICEA	1	1	0	0	0.5
MACHAERANTHERA CANESCANS	4	1	0	0	1.3
SENECIO MULTILOBATUS	1	0	0	0	0.3
SUBTOTAL					2.3
GRASS - PLANTED					
AGROPYRON SPECIES	2	8	7	17	8.5
AGROPYRON TRICHOPHORUM	0	6	3	2	2.8
ORYZOPSIS HYMENOIDES	0	0	6	0	1.5
SUBTOTAL					12.8
GRASS - INVADED					
AGROPYRON CRISTATUM	0	2	2	2	1.5
SUBTOTAL					1.5
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	7	0	1.8
CERATOIDES LANATA	0	0	1	0	0.3
CHRYSOTHAMNUS NAUSEOSUS	0	11	4	17	8.0
CHRYSOTHAMNUS VISCIDIFLORUS	16	0	4	0	5.0
PURSHIA TRIDENTATA	3	4	0	5	3.0
SUBTOTAL					18.0
TOTAL PLANTED SPECIES					49.0
TOTAL INVADED SPECIES					3.8
GRAND TOTAL					52.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	0	0	0	6	1.5
LINUM LEWISII	1	5	0	4	2.5
MELILOTUS OFFICINALIS	0	0	1	0	0.3
SUBTOTAL					4.3
FORB - INVADED					
CHAENACTIS DOUGLASII	1	0	1	0	0.5
MACHAERANTHERA CANESCANS	0	0	1	0	0.3
MACHAERANTHERA SPECIES	5	0	0	1	1.5
SUBTOTAL					2.3
GRASS - PLANTED					
AGROPYRON SPECIES	0	6	6	5	4.3
AGROPYRON TRICHOPHORUM	0	4	4	4	3.0
ORYZOPSIS HYMENOIDES	7	1	0	3	2.8
STIPA VIRIDULA	0	0	1	0	0.3
SUBTOTAL					10.3
GRASS - INVADED					
AGROPYRON CRISTATUM	0	0	1	1	0.5
STIPA COMATA	2	0	0	2	1.0
SUBTOTAL					1.5
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	8	0	0	2.0
CHRYSOTHAMNUS VISCIDIFLORUS	5	0	0	1	1.5
PURSHIA TRIDENTATA	0	0	7	2	2.3
SUBTOTAL					5.8
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	16	3	1	1	5.3
SUBTOTAL					5.3
TOTAL PLANTED SPECIES					20.3
TOTAL INVADED SPECIES					9.0
GRAND TOTAL					29.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	0	0	6	8	3.5
LINUM LEWISII	0	8	4	0	3.0
SUBTOTAL					6.5
FORB - INVADED					
MACHAERANTHERA CANESCANS	1	0	0	0	0.3
SENECIO MULTILOBATUS	0	0	1	0	0.3
SUBTOTAL					0.5
GRASS - PLANTED					
AGROPYRON SPECIES	8	0	3	9	5.0
AGROPYRON TRICHOPHORUM	0	0	4	1	1.3
ELYMUS CINEREUS	0	0	0	1	0.3
ORYZOPSIS HYMENOIDES	12	11	0	0	5.8
SUBTOTAL					12.3
GRASS - INVADED					
BROMUS TECTORUM	1	0	0	0	0.3
SUBTOTAL					0.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	6	0	1.5
CHRYSOTHAMNUS NAUSEOSUS	1	1	1	16	4.8
CHRYSOTHAMNUS VISCIDIFLORUS	1	9	1	0	2.8
PURSHIA TRIDENTATA	0	0	0	6	1.5
SUBTOTAL					10.5
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	1	0	0	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					29.3
TOTAL INVADED SPECIES					1.0
GRAND TOTAL					30.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	11	0	3	3.5
LINUM LEWISII	0	2	3	3	2.0
MELILOTUS OFFICINALIS	0	1	0	0	0.3
SUBTOTAL					5.8
FORB - INVADED					
ASTRAGALUS PURSHII	0	0	1	0	0.3
CRYPTANTHA SERICEA	1	0	0	0	0.3
IPOMOPSIS AGGREGATA	1	0	0	0	0.3
MACHAERANTHERA CANESCANS	1	1	0	2	1.0
PHYSARIA FLORIBUNDA	1	0	0	0	0.3
SUBTOTAL					2.0
GRASS - PLANTED					
AGROPYRON SPECIES	2	4	1	7	3.5
AGROPYRON TRICHOPHORUM	1	0	0	2	0.8
ORYZOPSIS HYMENOIDES	1	9	2	17	7.3
STIPA VIRIDULA	0	3	0	0	0.8
SUBTOTAL					12.3
GRASS - INVADED					
BROMUS TECTORUM	0	0	1	0	0.3
SITANION HYSTRIX	0	0	3	0	0.8
SUBTOTAL					1.0
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	7	0	0	1.8
CHRYSOTHAMNUS NAUSEOSUS	0	14	22	5	10.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	1	0	0.3
SUBTOTAL					12.3
TOTAL PLANTED SPECIES					30.3
TOTAL INVADED SPECIES					3.0
GRAND TOTAL					33.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
LINUM LEWISII	3	3	14	7	6.8
SUBTOTAL					6.8
FORB - INVADED					
CHAENACTIS DOUGLASII	1	0	0	0	0.3
CRYPTANTHA SERICEA	0	1	1	8	2.5
IPOMOPSIS AGGREGATA	1	0	0	0	0.3
MACHAERANTHERA CANESCANS	0	2	0	4	1.5
SENECIO MULTILOBATUS	0	1	0	0	0.3
SUBTOTAL					4.8
GRASS - PLANTED					
AGROPYRON SPECIES	1	0	1	1	0.8
AGROPYRON TRICHOPHORUM	3	0	0	0	0.8
ORYZOPSIS HYMENOIDES	6	36	1	11	13.5
SUBTOTAL					15.0
GRASS - INVADED					
BROMUS TECTORUM	2	0	1	0	0.8
SITANION HYSTRIX	0	7	0	1	2.0
STIPA COMATA	0	0	2	0	0.5
SUBTOTAL					3.3
SHRUB - PLANTED					
CHRYSOTHAMNUS NAUSEOSUS	4	0	0	0	1.0
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	0	1	0.3
SUBTOTAL					1.3
SHRUB - INVADED					
GUTIERREZIA SARCTHRAE	1	0	0	1	0.5
SUBTOTAL					0.5
TOTAL PLANTED SPECIES					23.0
TOTAL INVADED SPECIES					8.5
GRAND TOTAL					31.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	18	0	14	21	13.3
LINUM LEWISII	2	7	0	0	2.3
SUBTOTAL					15.5
FORB - INVADED					
CHAENACTIS DOUGLASII	1	0	0	0	0.3
MACHAERANTHERA CANESCANS	0	0	1	0	0.3
SUBTOTAL					0.5
GRASS - PLANTED					
AGROPYRON SPECIES	12	6	7	6	7.8
AGROPYRON TRICHOPHORUM	1	1	2	2	1.5
ORYZOPSIS HYMENOIDES	0	11	3	6	5.0
STIPA VIRIDULA	0	0	1	0	0.3
SUBTOTAL					14.5
GRASS - INVADED					
STIPA COMATA	0	0	0	1	0.3
SUBTOTAL					0.3
SHRUB - PLANTED					
CHRYSOTHAMNUS NAUSEOSUS	4	19	1	4	7.0
CHRYSOTHAMNUS VISCIDIFLORUS	1	0	0	0	0.3
PURSHIA TRIDENTATA	0	4	0	0	1.0
SUBTOTAL					8.3
TOTAL PLANTED SPECIES					38.3
TOTAL INVADED SPECIES					0.8
GRAND TOTAL					39.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-CRIMPING
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	23	0	0	5.8
LINUM LEWISII	2	0	0	3	1.3
SUBTOTAL					7.0
FORB - INVADED					
CHAENACTIS DOUGLASII	0	0	1	1	0.5
MACHAERANTHERA CANESCANS	1	2	3	0	1.5
SUBTOTAL					2.0
GRASS - PLANTED					
AGROPYRON SPECIES	9	4	8	18	9.8
AGROPYRON TRICHOPHORUM	0	4	1	1	1.5
ORYZOPSIS HYMENOIDES	33	0	1	4	9.5
SUBTOTAL					20.8
GRASS - INVADED					
BROMUS TECTORUM	0	0	1	1	0.5
SITANION HYSTRIX	0	1	0	0	0.3
SUBTOTAL					0.8
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	19	0	0	4.8
ATRIPLEX CANESCENS	0	0	0	1	0.3
CHRYSOTHAMNUS NAUSEOSUS	0	22	0	18	10.0
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	0	2	0.5
SUBTOTAL					15.5
TOTAL PLANTED SPECIES					43.3
TOTAL INVADED SPECIES					2.8
GRAND TOTAL					46.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	21	0	0	0	5.3
LINUM LEWISII	0	1	0	0	0.3
SUBTOTAL					5.5
FORB - INVADED					
CHAENACTIS DOUGLASII	0	1	0	0	0.3
MACHAERANTHERA CANESCANS	0	0	1	0	0.3
SENECIO MULTILOBATUS	0	0	1	0	0.3
SUBTOTAL					0.8
GRASS - PLANTED					
AGROPYRON SPECIES	2	8	3	9	5.5
AGROPYRON TRICHOPHORUM	4	5	0	4	3.3
ORYZOPSIS HYMENOIDES	4	3	1	4	3.0
SUBTOTAL					11.8
GRASS - INVADED					
AGROPYRON CRISTATUM	1	0	6	0	1.8
STIPA COMATA	1	0	0	0	0.3
SUBTOTAL					2.0
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	2	19	0	0	5.3
CHRYSOTHAMNUS NAUSEOSUS	0	0	29	0	7.3
CHRYSOTHAMNUS VISCIDIFLORUS	47	0	2	0	12.3
PURSHIA TRIDENTATA	0	0	0	7	1.8
SUBTOTAL					26.5
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	4	3	1	2.0
SUBTOTAL					2.0
TOTAL PLANTED SPECIES					43.8
TOTAL INVADED SPECIES					4.8
GRAND TOTAL					48.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS				TREATMENT PLOT
	#5	#6	#7	#8	AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	18	0	0	5	5.8
LINUM LEWISII	0	4	4	9	4.3
MELILOTUS OFFICINALIS	0	0	5	1	1.5
SUBTOTAL					11.5
FORB - INVADED					
MACHAERANTHERA CANESCANS	0	0	0	1	0.3
SUBTOTAL					0.3
GRASS - PLANTED					
AGROPYRON SPECIES	16	7	4	14	10.3
AGROPYRON TRICHOPHORUM	3	0	0	1	1.0
ELYMUS CINEREUS	1	0	0	0	0.3
ORYZOPSIS HYMENOIDES	0	16	13	5	8.5
STIPA VIRIDULA	0	0	5	0	1.3
SUBTOTAL					21.3
GRASS - INVADED					
BROMUS TECTORUM	2	0	0	0	0.5
STIPA COMATA	1	0	0	0	0.3
SUBTOTAL					0.8
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	2	0	0	0	0.5
CHRYSOTHAMNUS NAUSEOSUS	5	19	1	0	6.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	0	1	0.3
SUBTOTAL					7.0
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	1	0	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					39.8
TOTAL INVADED SPECIES					1.3
GRAND TOTAL					41.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=NO FERTILIZER

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	9	0	13	11	8.3
LINUM LEWISII	5	0	0	2	1.8
SUBTOTAL					10.0
FORB - INVADED					
CHAENACTIS DOUGLASII	2	0	0	0	0.5
CRYPTANTHA SERICEA	0	1	0	0	0.3
SENECIO MULTILOBATUS	0	1	0	0	0.3
SUBTOTAL					1.0
GRASS - PLANTED					
AGROPYRON SPECIES	13	19	18	24	18.5
AGROPYRON TRICHOPHORUM	2	0	1	4	1.8
ELYMUS CINEREUS	0	5	0	0	1.3
ORYZOPSIS HYMENOIDES	7	11	0	3	5.3
SUBTOTAL					26.8
GRASS - INVADED					
AGROPYRON CRISTATUM	1	0	0	2	0.8
SUBTOTAL					0.8
SHRUB - PLANTED					
CERATOIDES LANATA	0	0	1	0	0.3
CHRYSOTHAMNUS NAUSEOSUS	0	1	19	0	5.0
CHRYSOTHAMNUS VISCIDIFLORUS	6	0	0	6	3.0
SUBTOTAL					8.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	4	1	1.3
SUBTOTAL					1.3
TOTAL PLANTED SPECIES					45.0
TOTAL INVADED SPECIES					3.0
GRAND TOTAL					48.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS				TREATMENT PLOT
	#5	#6	#7	#8	AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	36	0	0	29	16.3
LINUM LEWISII	0	0	4	0	1.0
SUBTOTAL					17.3
FORB - INVADED					
CHAENACTIS DOUGLASII	0	1	1	0	0.5
CRUCIFERAE SPECIES	1	1	0	0	0.5
CRYPTANTHA SERICEA	0	2	1	0	0.8
MACHAERANTHERA CANESCANS	1	1	0	0	0.5
SENECIO MULTILOBATUS	0	0	1	0	0.3
SUBTOTAL					2.5
GRASS - PLANTED					
AGROPYRON SPECIES	9	0	6	5	5.0
AGROPYRON TRICHOPHORUM	0	0	1	4	1.3
ORYZOPSIS HYMENOIDES	12	24	11	2	12.3
SUBTOTAL					18.5
GRASS - INVADED					
AGROPYRON CRISTATUM	0	1	0	0	0.3
BROMUS TECTORUM	0	2	0	0	0.5
STIPA COMATA	0	0	0	3	0.8
SUBTOTAL					1.5
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	5	0	1.3
CHRYSOTHAMNUS NAUSEOSUS	13	0	0	0	3.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	3	0	0	0.8
SUBTOTAL					5.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	4	1	1	0	1.5
SUBTOTAL					1.5
TOTAL PLANTED SPECIES					41.0
TOTAL INVADED SPECIES					5.5
GRAND TOTAL					46.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	36	0	0	9.0
LINUM LEWISII	7	8	4	3	5.5
SUBTOTAL					14.5
FORB - INVADED					
ASTRAGALUS PURSHII	0	1	0	0	0.3
CHAENACTIS DOUGLASII	0	0	0	1	0.3
UNKNOWN FORB	0	0	1	0	0.3
SUBTOTAL					0.8
GRASS - PLANTED					
AGROPYRON SPECIES	13	9	14	17	13.3
AGROPYRON TRICHOPHORUM	3	0	11	9	5.8
ORYZOPSIS HYMENOIDES	0	4	7	0	2.8
SUBTOTAL					21.8
GRASS - INVADED					
AGROPYRON CRISTATUM	0	0	1	0	0.3
SITANION HYSTRIX	2	1	0	0	0.8
SUBTOTAL					1.0
SHRUB - PLANTED					
CHRYSOTHAMNUS NAUSEOSUS	13	0	0	0	3.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	0	1	0.3
SUBTOTAL					3.5
TOTAL PLANTED SPECIES					39.8
TOTAL INVADED SPECIES					1.8
GRAND TOTAL					41.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-SOWING

SPECIES	SUBPLOTS				TREATMENT PLOT
	#5	#6	#7	#8	AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	0	22	22	11.0
LINUM LEWISII	1	4	1	0	1.5
SUBTOTAL					12.5
FORB - INVADED					
CRYPTANTHA SERICEA	0	0	1	0	0.3
MACHAERANTHERA CANESCANS	0	0	0	1	0.3
SUBTOTAL					0.5
GRASS - PLANTED					
AGROPYRON SPECIES	11	0	0	2	3.3
AGROPYRON TRICHOPHORUM	2	0	0	1	0.8
ORYZOPSIS HYMENOIDES	0	8	4	0	3.0
SUBTOTAL					7.0
GRASS - INVADED					
SITANION HYSTRIX	0	4	4	2	2.5
SUBTOTAL					2.5
SHRUB - PLANTED					
CHRYSOTHAMNUS NAUSEOSUS	0	2	0	4	1.5
CHRYSOTHAMNUS VISCIDIFLORUS	0	6	7	7	5.0
PURSHIA TRIDENTATA	13	0	0	0	3.3
SUBTOTAL					9.8
TOTAL PLANTED SPECIES					29.3
TOTAL INVADED SPECIES					3.0
GRAND TOTAL					32.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	0	35	0	0	8.8
LINUM LEWISII	0	0	4	0	1.0
SUBTOTAL					9.8
FORB - INVADED					
CHAENACTIS DOUGLASII	2	0	2	0	1.0
CRYPTANTHA SERICEA	1	1	0	3	1.3
MACHAERANTHERA CANESCANS	0	1	0	1	0.5
SENECIO MULTILOBATUS	0	0	1	0	0.3
SUBTOTAL					3.0
GRASS - PLANTED					
AGROPYRON SPECIES	2	9	7	4	5.5
AGROPYRON TRICHOPHORUM	2	6	3	3	3.5
ORYZOPSIS HYMENOIDES	17	1	0	7	6.3
SUBTOTAL					15.3
GRASS - INVADED					
BROMUS TECTORUM	0	0	0	1	0.3
SITANION HYSTRIX	1	0	0	0	0.3
STIPA COMATA	2	7	4	3	4.0
SUBTOTAL					4.5
SHRUB - PLANTED					
CERATOIDES LANATA	1	1	0	0	0.5
CHRYSOTHAMNUS NAUSEOSUS	0	0	0	6	1.5
CHRYSOTHAMNUS VISCIDIFLORUS	1	0	0	0	0.3
PURSHIA TRIDENTATA	0	3	0	0	0.8
SUBTOTAL					3.0
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	1	0	0	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					28.0
TOTAL INVADED SPECIES					7.8
GRAND TOTAL					35.8

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
LINUM LEWISII	7	0	0	0	1.8
SUBTOTAL					1.8
FORB - INVADED					
CHAENACTIS DOUGLASII	0	0	1	0	0.3
CRUCIFERAE SPECIES	0	0	0	2	0.5
CRYPTANTHA SERICEA	1	0	1	0	0.5
MACHAERANTHERA CANESCANS	1	1	1	1	1.0
SUBTOTAL					2.3
GRASS - PLANTED					
AGROPYRON SPECIES	8	7	0	26	10.3
AGROPYRON TRICHOPHORUM	0	1	0	0	0.3
ORYZOPSIS HYMENOIDES	0	3	16	0	4.8
STIPA VIRIDULA	0	0	0	1	0.3
SUBTOTAL					15.5
GRASS - INVADED					
AGROPYRON CRISTATUM	1	0	0	0	0.3
SITANION HYSTRIX	0	3	0	3	1.5
STIPA COMATA	0	1	4	0	1.3
SUBTOTAL					3.0
SHRUB - PLANTED					
CHRYSOTHAMNUS NAUSEOSUS	9	0	0	1	2.5
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	13	0	3.3
SUBTOTAL					5.8
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	1	0	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					23.0
TOTAL INVADED SPECIES					5.5
GRAND TOTAL					28.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	9	0	0	1	2.5
LINUM LEWISII	0	0	0	4	1.0
SUBTOTAL					3.5
FORB - INVADED					
MACHAERANTHERA CANESCANS	0	5	0	0	1.3
SUBTOTAL					1.3
GRASS - PLANTED					
AGROPYRON SPECIES	7	3	4	8	5.5
AGROPYRON TRICHOPHORUM	12	2	0	3	4.3
ELYMUS CINEREUS	0	4	0	0	1.0
ORYZOPSIS HYMENOIDES	0	0	4	0	1.0
STIPA VIRIDULA	0	0	4	0	1.0
SUBTOTAL					12.8
GRASS - INVADED					
SITANION HYSTRIX	0	0	1	0	0.3
SUBTOTAL					0.3
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	0	0	1	0.3
ATRIPLEX CANESCENS	5	0	0	0	1.3
CHRYSOTHAMNUS NAUSEOSUS	6	0	3	0	2.3
CHRYSOTHAMNUS VISCIDIFLORUS	0	27	0	0	6.8
SUBTOTAL					10.5
TOTAL PLANTED SPECIES					26.8
TOTAL INVADED SPECIES					1.5
GRAND TOTAL					28.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=1 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS				TREATMENT PLOT AVERAGE
	#5	#6	#7	#8	
FORB - PLANTED					
ASTRAGALUS CICER	0	0	9	21	7.5
LINUM LEWISII	1	1	1	0	0.8
SUBTOTAL					8.3
FORB - INVADED					
CHAENACTIS DOUGLASII	0	1	1	0	0.5
CRUCIFERAE SPECIES	0	0	1	0	0.3
IPOMOPSIS AGGREGATA	1	0	1	0	0.5
MACHAERANTHERA CANESCANS	1	2	0	0	0.8
SUBTOTAL					2.0
GRASS - PLANTED					
AGROPYRON SPECIES	3	5	0	15	5.8
AGROPYRON TRICHOPHORUM	4	2	0	2	2.0
ORYZOPSIS HYMENOIDES	9	4	0	8	5.3
SUBTOTAL					13.0
GRASS - INVADED					
BROMUS TECTORUM	0	1	0	0	0.3
SITANION HYSTRIX	2	2	7	0	2.8
STIPA COMATA	3	3	4	0	2.5
SUBTOTAL					5.5
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	7	0	0	1	2.0
CHRYSOTHAMNUS NAUSEOSUS	0	0	5	0	1.3
CHRYSOTHAMNUS VISCIDIFLORUS	1	3	2	1	1.8
PURSHIA TRIDENTATA	0	0	0	11	2.8
SUBTOTAL					7.8
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	7	0	1	0	2.0
SUBTOTAL					2.0
TOTAL PLANTED SPECIES					29.0
TOTAL INVADED SPECIES					9.5
GRAND TOTAL					38.5

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=2 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	0	0	1	29	7.5
LINUM LEWISII	3	5	1	0	2.3
MELILOTUS OFFICINALIS	1	0	0	0	0.3
SUBTOTAL					10.0
FORB - INVADED					
CHAENACTIS DOUGLASII	1	0	0	0	0.3
CRYPTANTHA SERICEA	0	1	0	0	0.3
MACHAERANTHERA CANESCANS	1	0	0	1	0.5
SUBTOTAL					1.0
GRASS - PLANTED					
AGROPYRON SPECIES	11	14	11	3	9.8
AGROPYRON TRICHOPHORUM	1	6	6	4	4.3
ORYZOPSIS HYMENOIDES	7	7	6	0	5.0
STIPA VIRIDULA	0	0	0	2	0.5
SUBTOTAL					19.5
GRASS - INVADED					
AGROPYRON CRISTATUM	1	0	0	5	1.5
BROMUS TECTORUM	1	0	0	0	0.3
SITANION HYSTRIX	1	0	0	0	0.3
SUBTOTAL					2.0
SHRUB - PLANTED					
CHRYSOTHAMNUS NAUSEOSUS	0	0	19	17	9.0
CHRYSOTHAMNUS VISCIDIFLORUS	1	0	0	0	0.3
PURSHIA TRIDENTATA	0	0	8	0	2.0
SUBTOTAL					11.3
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	2	0	0.5
SUBTOTAL					0.5
TOTAL PLANTED SPECIES					40.8
TOTAL INVADED SPECIES					3.5
GRAND TOTAL					44.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-2
REPORT YEAR= 1982

BLOCK=3 MULCH TREATMENT= STRAW-NETTING
FERTILIZER TREATMENT=FERTILIZER-SOWING/1ST GROWING

SPECIES	SUBPLOTS #5	#6	#7	#8	TREATMENT PLOT AVERAGE
FORB - PLANTED					
ASTRAGALUS CICER	34	0	21	22	19.3
LINUM LEWISII	1	0	8	0	2.3
SUBTOTAL					21.5
FORB - INVADED					
CHAENACTIS DOUGLASII	0	3	0	0	0.8
CRYPTANTHA SERICEA	5	0	0	0	1.3
MACHAERANTHERA CANESCANS	0	0	0	2	0.5
SUBTOTAL					2.5
GRASS - PLANTED					
AGROPYRON SPECIES	16	2	17	5	10.0
AGROPYRON TRICHOPHORUM	0	0	3	14	4.3
ORYZOPSIS HYMENOIDES	0	5	3	3	2.8
STIPA VIRIDULA	0	2	0	0	0.5
SUBTOTAL					17.5
GRASS - INVADED					
BROMUS TECTORUM	0	0	1	0	0.3
SITANION HYSTRIX	0	0	1	0	0.3
SUBTOTAL					0.5
SHRUB - PLANTED					
ARTEMISIA TRIDENTATA	0	19	0	11	7.5
ATRIPLEX CANESCENS	0	0	0	2	0.5
CERATOIDES LANATA	0	0	0	1	0.3
CHRYSOTHAMNUS NAUSEOSUS	0	0	0	11	2.8
CHRYSOTHAMNUS VISCIDIFLORUS	1	0	0	0	0.3
PURSHIA TRIDENTATA	2	5	0	0	1.8
SUBTOTAL					13.0
SHRUB - INVADED					
GUTIERREZIA SAROTHRAE	0	0	0	1	0.3
SUBTOTAL					0.3
TOTAL PLANTED SPECIES					52.0
TOTAL INVADED SPECIES					3.3
GRAND TOTAL					55.3

APPENDIX 6-1.4

Analyses for Plot R-2 Experimental Revegetation Data

Duncan's Multiple Range Test results for significant main effect differences as identified for analyses summarized on Table 6-7.

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                      RIO BLANCO OIL SHALE COMPANY
                     VEGETATION MONITORING PROGRAM
                 EXPERIMENTAL REVEGETATION STUDIES - R2

                       ONE-WAY ANALYSIS OF VARIANCE
              COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
                        BETWEEN ALL YEARS SAMPLED
          GROWTH FORM=GRASS   PLANTED OR INVADED SPECIES=PLANTED

                      GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=1159  MSE=5.7E-04
HARMONIC MEAN OF CELL SIZES=192.796

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING            MEAN       N  RPTYR

                A        0.039338     184  1980
                A
                A        0.038753     173  1982

                B        0.029538     187  1981

                C        0.020666     188  1978
                C
                C        0.020228     214  1977

                D        0.010080     219  1976
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                    RIO BLANCO OIL SHALE COMPANY
                    VEGETATION MONITORING PROGRAM
                EXPERIMENTAL REVEGETATION STUDIES - R2

                    ONE-WAY ANALYSIS OF VARIANCE
              COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
                     BETWEEN ALL YEARS SAMPLED
         GROWTH FORM=GRASS   PLANTED OR INVADED SPECIES=INVADED

                  GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=275  MSE=1.9E-04
HARMONIC MEAN OF CELL SIZES=30.7157

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN      N  RPTYR

               A          0.031455     40  1976

               B          0.010476     74  1982
               B
               B          0.009438     40  1980
               B
               B          0.007439     81  1981
               B
               B          0.005000     35  1978
               B
               B          0.004773     11  1977
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                        RIO BLANCO OIL SHALE COMPANY
                       VEGETATION MONITORING PROGRAM
                   EXPERIMENTAL REVEGETATION STUDIES - R2

                        ONE-WAY ANALYSIS OF VARIANCE
                COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
                         BETWEEN ALL YEARS SAMPLED
          GROWTH FORM=FORB   PLANTED OR INVADED SPECIES=PLANTED

                      GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=831  MSE=6.3E-04
HARMONIC MEAN OF CELL SIZES=134.714

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN       N   RPTYR

                A         0.044687     106   1982

                B         0.032061     124   1980
                B
                B         0.027918     126   1981

                C         0.009453     169   1977
                C
                C         0.009231     130   1978
                C
                C         0.007335     182   1976
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                          RIO BLANCO OIL SHALE COMPANY
                         VEGETATION MONITORING PROGRAM
                     EXPERIMENTAL REVEGETATION STUDIES - R2

                          ONE-WAY ANALYSIS OF VARIANCE
                 COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
                           BETWEEN ALL YEARS SAMPLED
             GROWTH FORM=FORB   PLANTED OR INVADED SPECIES=INVADED

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=998  MSE=.0027803
HARMONIC MEAN OF CELL SIZES=152.518

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  RPTYR

               A           0.076029    135  1977

               B           0.056070    111  1978

               C           0.022265    121  1976
               C
       D       C           0.013893    236  1980
       D
       D                   0.007159    242  1981
       D
       D                   0.005833    159  1982
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                         RIO BLANCO OIL SHALE COMPANY
                        VEGETATION MONITORING PROGRAM
                    EXPERIMENTAL REVEGETATION STUDIES - R2

                         ONE-WAY ANALYSIS OF VARIANCE
                 COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
                           BETWEEN ALL YEARS SAMPLED
             GROWTH FORM=SHRUB   PLANTED OR INVADED SPECIES=PLANTED

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=805  MSE=6.1E-04
HARMONIC MEAN OF CELL SIZES=131.52

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N   RPTYR

                  A        0.029679     170   1982
                  A
                  A        0.026160     114   1980
                  A
                  A        0.024411     110   1981

                  B        0.016034     140   1978
                  B
         C        B        0.010295     119   1977
         C
         C                 0.004304     158   1976
```

Duncan's Multiple Range Test results for significant main effect differences as indicated for analyses summarized on Table 6-8. Block, mulch and fertilizer designations are presented on Figure 6-2.

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                         RIO BLANCO OIL SHALE COMPANY
                        VEGETATION MONITORING PROGRAM
                    EXPERIMENTAL REVEGETATION STUDIES - R2

                        THREE-WAY ANALYSIS OF VARIANCE
                  COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
                BETWEEN BLOCKS, MULCHING AND FERTILIZER TREATMENTS
                            FOR ALL YEARS SAMPLED
           GROWTH FORM=GRASS   PLANTED OR INVADED SPECIES=INVADED

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=233  MSE=2.7E-04
HARMONIC MEAN OF CELL SIZES=67.7185

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  MULCH

               A           0.015391      91  4
               A
       B       A           0.012465      67  3
       B
       B                   0.009289      70  2
       B
       B                   0.006698      53  1
```

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                         RIO BLANCO OIL SHALE COMPANY
                        VEGETATION MONITORING PROGRAM
                    EXPERIMENTAL REVEGETATION STUDIES - R2

                        THREE-WAY ANALYSIS OF VARIANCE
                  COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
                BETWEEN BLOCKS, MULCHING AND FERTILIZER TREATMENTS
                            FOR ALL YEARS SAMPLED
            GROWTH FORM=FORB   PLANTED OR INVADED SPECIES=INVADED

                       GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=956  MSE=.0033789
HARMONIC MEAN OF CELL SIZES=248.202

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN       N  MULCH

                A         0.034900     210  1
                A
        B       A         0.029202     255  4
        B
        B       C         0.022919     280  3
                C
                C         0.015165     259  2
```

```
                          RIO BLANCO OIL SHALE COMPANY
                         VEGETATION MONITORING PROGRAM
                     EXPERIMENTAL REVEGETATION STUDIES - R2

                         THREE-WAY ANALYSIS OF VARIANCE
                 COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
               BETWEEN BLOCKS, MULCHING AND FERTILIZER TREATMENTS
                             FOR ALL YEARS SAMPLED
             GROWTH FORM=FORB   PLANTED OR INVADED SPECIES=INVADED

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=956  MSE=.0033789
HARMONIC MEAN OF CELL SIZES=250.417

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  FERTILIZ

               A           0.032415     241  4
               A
       B       A           0.026125     243  3
       B       A
       B       A           0.023158     248  2
       B
       B                   0.019181     272  1
```

```
                       RIO BLANCO OIL SHALE COMPANY
                      VEGETATION MONITORING PROGRAM
                  EXPERIMENTAL REVEGETATION STUDIES - R2

                      THREE-WAY ANALYSIS OF VARIANCE
               COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
             BETWEEN BLOCKS, MULCHING AND FERTILIZER TREATMENTS
                          FOR ALL YEARS SAMPLED
          GROWTH FORM=SHRUB   PLANTED OR INVADED SPECIES=PLANTED

                      GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=763  MSE=6.7E-04
HARMONIC MEAN OF CELL SIZES=202.497

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN       N  MULCH

                A         0.025018     203  2
                A
                A         0.020280     192  1

                B         0.014231     212  3
                B
                B         0.014086     204  4
```

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                         RIO BLANCO OIL SHALE COMPANY
                        VEGETATION MONITORING PROGRAM
                    EXPERIMENTAL REVEGETATION STUDIES - R2

                        THREE-WAY ANALYSIS OF VARIANCE
                 COMPARING ARCSINE TRANSFORMED COVER ESTIMATES
               BETWEEN BLOCKS, MULCHING AND FERTILIZER TREATMENTS
                            FOR ALL YEARS SAMPLED
           GROWTH FORM=SHRUB   PLANTED OR INVADED SPECIES=INVADED

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=15  MSE=1.1E-04
HARMONIC MEAN OF CELL SIZES=17.6538

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  BLOCK

               A           0.021811     18  1

               B           0.006945     18  3
               B
               B           0.006324     17  2
```

APPENDIX 6-1.5

Plot R-3 Experimental Revegetation Data

Cover Data

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 1
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0	0	6	2.0
SUBTOTAL				2.0
GRASS - PLANTED				
AGROPYRON SPECIES	11	14	7	10.7
AGROPYRON TRICHOPHORUM	16	14	17	15.7
BROMUS INERMIS	0	0	1	0.3
ORYZOPSIS HYMENOIDES	2	1	1	1.3
SUBTOTAL				28.0
GRASS - INVADED				
BROMUS TECTORUM	1	0	1	0.7
SUBTOTAL				0.7
SHRUB - PLANTED				
ATRIPLEX CANESCENS	1	5	0	2.0
CERATOIDES LANATA	7	19	3	9.7
PURSHIA TRIDENTATA	0	1	0	0.3
SUBTOTAL				12.0
SHRUB - INVADED				
CHRYSOTHAMNUS VISCIDIFLORUS	0	0	10	3.3
SUBTOTAL				3.3
TOTAL PLANTED SPECIES				42.0
TOTAL INVADED SPECIES				4.0
GRAND TOTAL				46.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3

REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 2
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	3	0	1	1.3
LINUM LEWISII	1	0	0	0.3
MELILOTUS OFFICINALIS	1	0	3	1.3
SUBTOTAL				3.0
FORB - INVADED				
SPHAERALCEA COCCINEA	0	1	0	0.3
SUBTOTAL				0.3
GRASS - PLANTED				
AGROPYRON SPECIES	8	6	2	5.3
AGROPYRON TRICHOPHORUM	8	11	2	7.0
BROMUS INERMIS	1	1	1	1.0
ORYZOPSIS HYMENOIDES	1	1	2	1.3
SUBTOTAL				14.7
GRASS - INVADED				
BROMUS TECTORUM	1	0	1	0.7
SUBTOTAL				0.7
SHRUB - PLANTED				
ATRIPLEX CANESCENS	46	7	7	20.0
CERATOIDES LANATA	24	15	14	17.7
CHRYSOTHAMNUS NAUSEOSUS	0	0	7	2.3
PURSHIA TRIDENTATA	0	2	3	1.7
SUBTOTAL				41.7
TOTAL PLANTED SPECIES				59.3
TOTAL INVADED SPECIES				1.0
GRAND TOTAL				60.3

```
APPENDIX      .  PERCENT COVER OF PLANT SPECIES SAMPLED ON
                 EXPERIMENTAL REVEGETATION PLOT R-3
                        REPORT YEAR= 1982

SAMPLE PLOT NUMBER=  3
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

     SPECIES                          SUBPLOTS            TREATMENT PLOT
                                 #4      #5      #6          AVERAGE

FORB  - PLANTED

  ASTRAGALUS CICER                0      10       3            4.3
SUBTOTAL                                                       4.3

GRASS - PLANTED

  AGROPYRON SPECIES              17       4       7            9.3
  AGROPYRON TRICHOPHORUM          8      19      16           14.3
  BROMUS INERMIS                  1       1       1            1.0
  ORYZOPSIS HYMENOIDES            0       1       2            1.0
SUBTOTAL                                                      25.7

GRASS - INVADED

  BROMUS TECTORUM                 2       1       0            1.0
SUBTOTAL                                                       1.0

SHRUB - PLANTED

  ATRIPLEX CANESCENS             12      15       7           11.3
  CERATOIDES LANATA              22      17       8           15.7
  CHRYSOTHAMNUS NAUSEOSUS         0       0       6            2.0
  KOCHIA PROSTRATA                0       0       2            0.7
  PURSHIA TRIDENTATA              0       1       1            0.7
SUBTOTAL                                                      30.3

TOTAL PLANTED SPECIES                                         60.3
TOTAL INVADED SPECIES                                          1.0
GRAND TOTAL                                                   61.3
```

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 4
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	11	3	5	6.3
MELILOTUS OFFICINALIS	1	0	0	0.3
SUBTOTAL				6.7
GRASS - PLANTED				
AGROPYRON SPECIES	9	6	2	5.7
AGROPYRON TRICHOPHORUM	11	7	26	14.7
BROMUS INERMIS	1	2	1	1.3
ORYZOPSIS HYMENOIDES	1	1	2	1.3
SUBTOTAL				23.0
GRASS - INVADED				
BROMUS TECTORUM	1	2	0	1.0
SUBTOTAL				1.0
SHRUB - PLANTED				
ATRIPLEX CANESCENS	23	16	2	13.7
CERATOIDES LANATA	9	3	3	5.0
PURSHIA TRIDENTATA	3	2	1	2.0
SUBTOTAL				20.7
TOTAL PLANTED SPECIES				50.3
TOTAL INVADED SPECIES				1.0
GRAND TOTAL				51.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 5
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	7	1	5	4.3
MELILOTUS OFFICINALIS	1	0	2	1.0
SUBTOTAL				5.3
FORB - INVADED				
UNKNOWN FORB	1	0	0	0.3
SUBTOTAL				0.3
GRASS - PLANTED				
AGROPYRON SPECIES	9	4	2	5.0
AGROPYRON TRICHOPHORUM	8	19	18	15.0
BROMUS INERMIS	1	1	1	1.0
ORYZOPSIS HYMENOIDES	1	1	3	1.7
SUBTOTAL				22.7
GRASS - INVADED				
BROMUS TECTORUM	1	0	0	0.3
SUBTOTAL				0.3
SHRUB - PLANTED				
ATRIPLEX CANESCENS	4	3	1	2.7
CERATOIDES LANATA	4	1	1	2.0
CHRYSOTHAMNUS NAUSEOSUS	0	0	3	1.0
PURSHIA TRIDENTATA	1	5	1	2.3
SUBTOTAL				8.0
TOTAL PLANTED SPECIES				36.0
TOTAL INVADED SPECIES				0.7
GRAND TOTAL				36.7

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 6
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS			TREATMENT PLOT AVERAGE
	#4	#5	#6	
FORB - PLANTED				
ASTRAGALUS CICER	0	24	1	8.3
MELILOTUS OFFICINALIS	0	1	0	0.3
SUBTOTAL				8.7
FORB - INVADED				
CRUCIFERAE SPECIES	1	0	0	0.3
CRYPTANTHA SERICEA	0	2	0	0.7
SUBTOTAL				1.0
GRASS - PLANTED				
AGROPYRON SPECIES	2	2	3	2.3
AGROPYRON TRICHOPHORUM	11	2	18	10.3
BROMUS INERMIS	2	3	1	2.0
ORYZOPSIS HYMENOIDES	3	2	2	2.3
SUBTOTAL				17.0
GRASS - INVADED				
BROMUS TECTORUM	1	0	1	0.7
POA SPECIES	1	4	2	2.3
SUBTOTAL				3.0
SHRUB - PLANTED				
ARTEMISIA TRIDENTATA	0	0	7	2.3
ATRIPLEX CANESCENS	9	0	0	3.0
CERATOIDES LANATA	1	15	2	6.0
PURSHIA TRIDENTATA	2	0	0	0.7
SUBTOTAL				12.0
TOTAL PLANTED SPECIES				37.7
TOTAL INVADED SPECIES				4.0
GRAND TOTAL				41.7

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 7
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	1	0	1	0.7
MACHAERANTHERA CANESCANS	0	1	0	0.3
MELILOTUS OFFICINALIS	2	1	2	1.7
SUBTOTAL				2.7
FORB - INVADED				
CRUCIFERAE SPECIES	1	0	0	0.3
PHYSARIA FLORIBUNDA	0	0	1	0.3
SENECIO MULTILOBATUS	1	0	0	0.3
SUBTOTAL				1.0
GRASS - PLANTED				
AGROPYRON SPECIES	0	1	2	1.0
AGROPYRON TRICHOPHORUM	0	1	6	2.3
ASTER SPECIES	1	0	0	0.3
BROMUS INERMIS	3	1	2	2.0
ORYZOPSIS HYMENOIDES	12	2	1	5.0
STIPA VIRIDULA	0	0	1	0.3
SUBTOTAL				11.0
GRASS - INVADED				
BROMUS TECTORUM	4	0	1	1.7
SITANION HYSTRIX	1	0	0	0.3
SUBTOTAL				2.0
SHRUB - PLANTED				
CERATOIDES LANATA	0	0	19	6.3
CHRYSOTHAMNUS NAUSEOSUS	6	0	0	2.0
PURSHIA TRIDENTATA	0	0	1	0.3
SUBTOTAL				8.7
TOTAL PLANTED SPECIES				22.3
TOTAL INVADED SPECIES				3.0
GRAND TOTAL				25.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 8
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	18	7	17	14.0
MELILOTUS OFFICINALIS	1	1	1	1.0
SUBTOTAL				15.0
FORB - INVADED				
PHYSARIA FLORIBUNDA	0	1	0	0.3
UNKNOWN FORB	0	1	0	0.3
SUBTOTAL				0.7
GRASS - PLANTED				
AGROPYRON SPECIES	1	1	0	0.7
AGROPYRON TRICHOPHORUM	3	4	20	9.0
BROMUS INERMIS	1	0	1	0.7
ORYZOPSIS HYMENOIDES	1	2	1	1.3
SUBTOTAL				11.7
GRASS - INVADED				
BROMUS TECTORUM	1	0	0	0.3
POA SPECIES	2	0	0	0.7
SUBTOTAL				1.0
SHRUB - PLANTED				
ATRIPLEX CANESCENS	0	0	7	2.3
CERATOIDES LANATA	0	0	13	4.3
PURSHIA TRIDENTATA	0	0	3	1.0
SUBTOTAL				7.7
TOTAL PLANTED SPECIES				34.3
TOTAL INVADED SPECIES				1.7
GRAND TOTAL				36.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 9
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0	0	1	0.3
MELILOTUS OFFICINALIS	2	0	1	1.0
SUBTOTAL				1.3
FORB - INVADED				
LEPTODACTYLON PUNGENS	2	0	0	0.7
MACHAERANTHERA CANESCANS	3	0	0	1.0
SUBTOTAL				1.7
GRASS - PLANTED				
AGROPYRON SPECIES	1	1	3	1.7
AGROPYRON TRICHOPHORUM	0	0	18	6.0
BROMUS INERMIS	0	2	1	1.0
ORYZOPSIS HYMENOIDES	1	2	1	1.3
POA SPECIES	4	1	0	1.7
SUBTOTAL				11.7
GRASS - INVADED				
BROMUS TECTORUM	1	2	0	1.0
DACTYLIS GLOMERATA	4	6	0	3.3
STIPA COMATA	3	7	1	3.7
SUBTOTAL				8.0
SHRUB - PLANTED				
ATRIPLEX CANESCENS	0	8	9	5.7
CERATOIDES LANATA	1	0	8	3.0
CHRYSOTHAMNUS NAUSEOSUS	1	0	6	2.3
PURSHIA TRIDENTATA	0	0	2	0.7
SUBTOTAL				11.7
SHRUB - INVADED				
GUTIERREZIA SAROTHRAE	0	1	0	0.3
KOCHIA PROSTRATA	2	0	0	0.7
SUBTOTAL				1.0
TOTAL PLANTED SPECIES				24.7
TOTAL INVADED SPECIES				10.7
GRAND TOTAL				35.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 10
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	21	7	0	9.3
MELILOTUS OFFICINALIS	1	0	0	0.3
SUBTOTAL				9.7
FORB - INVADED				
CRYPTANTHA SERICEA	0	1	0	0.3
MACHAERANTHERA CANESCANS	1	0	0	0.3
UNKNOWN FORB	1	0	1	0.7
SUBTOTAL				1.3
GRASS - PLANTED				
AGROPYRON SPECIES	7	7	1	5.0
AGROPYRON TRICHOPHORUM	0	5	16	7.0
BROMUS INERMIS	2	1	0	1.0
ORYZOPSIS HYMENOIDES	2	4	2	2.7
SUBTOTAL				15.7
GRASS - INVADED				
AGROPYRON CRISTATUM	4	0	0	1.3
BROMUS TECTORUM	4	3	1	2.7
POA SPECIES	3	2	0	1.7
SUBTOTAL				5.7
SHRUB - PLANTED				
ATRIPLEX CANESCENS	9	0	5	4.7
CERATOIDES LANATA	0	8	4	4.0
CHRYSOTHAMNUS NAUSEOSUS	0	0	9	3.0
PURSHIA TRIDENTATA	0	0	1	0.3
SUBTOTAL				12.0
TOTAL PLANTED SPECIES				37.3
TOTAL INVADED SPECIES				7.0
GRAND TOTAL				44.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 11
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	9	6	15	10.0
MELILOTUS OFFICINALIS	0	3	4	2.3
SUBTOTAL				12.3
FORB - INVADED				
ASTER SPECIES	0	1	0	0.3
PHYSARIA FLORIBUNDA	0	1	0	0.3
UNKNOWN FORB	0	0	1	0.3
SUBTOTAL				1.0
GRASS - PLANTED				
AGROPYRON SPECIES	4	6	3	4.3
AGROPYRON TRICHOPHORUM	0	1	15	5.3
BROMUS INERMIS	0	1	2	1.0
ORYZOPSIS HYMENOIDES	8	1	5	4.7
STIPA VIRIDULA	0	3	0	1.0
SUBTOTAL				16.3
GRASS - INVADED				
BROMUS TECTORUM	4	2	1	2.3
SUBTOTAL				2.3
SHRUB - PLANTED				
ARTEMISIA TRIDENTATA	0	23	0	7.7
ATRIPLEX CANESCENS	0	0	2	0.7
CERATOIDES LANATA	0	4	1	1.7
CHRYSOTHAMNUS NAUSEOSUS	1	0	0	0.3
PURSHIA TRIDENTATA	0	0	1	0.3
SUBTOTAL				10.7
TOTAL PLANTED SPECIES				39.3
TOTAL INVADED SPECIES				3.3
GRAND TOTAL				42.7

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 12
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	11	1	0	4.0
MELILOTUS OFFICINALIS	1	1	0	0.7
SUBTOTAL				4.7
FORB - INVADED				
CRYPTANTHA SERICEA	1	0	0	0.3
ERIOGONUM OVALIFOLIUM	0	2	0	0.7
SUBTOTAL				1.0
GRASS - PLANTED				
AGROPYRON SPECIES	12	3	2	5.7
AGROPYRON TRICHOPHORUM	7	23	21	17.0
BROMUS INERMIS	1	1	1	1.0
ORYZOPSIS HYMENOIDES	2	3	2	2.3
SUBTOTAL				26.0
GRASS - INVADED				
BROMUS TECTORUM	0	0	1	0.3
SITANION HYSTRIX	1	0	0	0.3
SUBTOTAL				0.7
SHRUB - PLANTED				
ATRIPLEX CANESCENS	0	1	4	1.7
CERATOIDES LANATA	0	3	4	2.3
PURSHIA TRIDENTATA	2	0	1	1.0
SUBTOTAL				5.0
SHRUB - INVADED				
GUTIERREZIA SAROTHRAE	0	0	1	0.3
SUBTOTAL				0.3
TOTAL PLANTED SPECIES				35.7
TOTAL INVADED SPECIES				2.0
GRAND TOTAL				37.7

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 13
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	19	39	16	24.7
LINUM LEWISII	0	0	1	0.3
MELILOTUS OFFICINALIS	1	0	2	1.0
SUBTOTAL				26.0
FORB - INVADED				
UNKNOWN FORB	0	1	0	0.3
SUBTOTAL				0.3
GRASS - PLANTED				
AGROPYRON SPECIES	1	0	1	0.7
AGROPYRON TRICHOPHORUM	3	11	6	6.7
BROMUS INERMIS	0	3	1	1.3
ORYZOPSIS HYMENOIDES	11	2	7	6.7
STIPA VIRIDULA	0	0	1	0.3
SUBTOTAL				15.7
GRASS - INVADED				
AGROPYRON CRISTATUM	1	0	0	0.3
BROMUS TECTORUM	2	1	1	1.3
SITANION HYSTRIX	0	0	1	0.3
SUBTOTAL				2.0
SHRUB - PLANTED				
ATRIPLEX CANESCENS	0	64	0	21.3
CERATOIDES LANATA	0	3	0	1.0
CHRYSOTHAMNUS NAUSEOSUS	8	0	0	2.7
PURSHIA TRIDENTATA	0	1	0	0.3
SUBTOTAL				25.3
SHRUB - INVADED				
GUTIERREZIA SAROTHRAE	8	0	0	2.7
SUBTOTAL				2.7
TOTAL PLANTED SPECIES				67.0
TOTAL INVADED SPECIES				5.0
GRAND TOTAL				72.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 14
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	7	2	0	3.0
LINUM LEWISII	1	0	0	0.3
MELILOTUS OFFICINALIS	2	0	0	0.7
SUBTOTAL				4.0
FORB - INVADED				
PHYSARIA FLORIBUNDA	1	0	0	0.3
SUBTOTAL				0.3
GRASS - PLANTED				
AGROPYRON SPECIES	0	3	6	3.0
AGROPYRON TRICHOPHORUM	0	11	14	8.3
BROMUS INERMIS	5	1	1	2.3
ORYZOPSIS HYMENOIDES	1	1	2	1.3
STIPA VIRIDULA	0	5	0	1.7
SUBTOTAL				16.7
GRASS - INVADED				
AGROPYRON CRISTATUM	13	6	2	7.0
BROMUS TECTORUM	1	0	0	0.3
SUBTOTAL				7.3
SHRUB - PLANTED				
ARTEMISIA TRIDENTATA	0	0	8	2.7
ATRIPLEX CANESCENS	33	0	5	12.7
CERATOIDES LANATA	0	6	1	2.3
PURSHIA TRIDENTATA	0	1	2	1.0
SUBTOTAL				18.7
TOTAL PLANTED SPECIES				39.3
TOTAL INVADED SPECIES				7.7
GRAND TOTAL				47.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 15
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	19	14	0	11.0
LINUM LEWISII	2	0	0	0.7
MELILOTUS OFFICINALIS	1	0	2	1.0
SUBTOTAL				12.7
FORB - INVADED				
MACHAERANTHERA CANESCANS	0	1	0	0.3
PHYSARIA FLORIBUNDA	0	1	0	0.3
SUBTOTAL				0.7
GRASS - PLANTED				
AGROPYRON SPECIES	6	11	7	8.0
AGROPYRON TRICHOPHORUM	2	0	9	3.7
BROMUS INERMIS	0	0	7	2.3
ORYZOPSIS HYMENOIDES	2	0	1	1.0
STIPA VIRIDULA	0	7	0	2.3
SUBTOTAL				17.3
GRASS - INVADED				
BROMUS TECTORUM	3	4	10	5.7
SUBTOTAL				5.7
SHRUB - PLANTED				
CERATOIDES LANATA	1	0	9	3.3
PURSHIA TRIDENTATA	0	1	1	0.7
SUBTOTAL				4.0
TOTAL PLANTED SPECIES				34.0
TOTAL INVADED SPECIES				6.3
GRAND TOTAL				40.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 16
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	9	3	4	5.3
MELILOTUS OFFICINALIS	1	0	1	0.7
SUBTOTAL				6.0
FORB - INVADED				
MACHAERANTHERA CANESCANS	1	1	0	0.7
SUBTOTAL				0.7
GRASS - PLANTED				
AGROPYRON SPECIES	7	11	9	9.0
AGROPYRON TRICHOPHORUM	0	0	24	8.0
BROMUS INERMIS	2	1	0	1.0
ORYZOPSIS HYMENOIDES	0	1	1	0.7
STIPA VIRIDULA	0	2	0	0.7
SUBTOTAL				19.3
GRASS - INVADED				
AGROPYRON CRISTATUM	20	22	2	14.7
SUBTOTAL				14.7
SHRUB - PLANTED				
CERATOIDES LANATA	2	0	5	2.3
PURSHIA TRIDENTATA	0	0	1	0.3
SUBTOTAL				2.7
TOTAL PLANTED SPECIES				28.0
TOTAL INVADED SPECIES				15.3
GRAND TOTAL				43.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 17
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS			TREATMENT PLOT AVERAGE
	#4	#5	#6	
FORB - PLANTED				
ASTRAGALUS CICER	11	2	0	4.3
LINUM LEWISII	0	1	0	0.3
MELILOTUS OFFICINALIS	4	3	7	4.7
SUBTOTAL				9.3
FORB - INVADED				
ASTER SPECIES	0	1	0	0.3
CRYPTANTHA SERICEA	1	0	4	1.7
LEPTODACTYLON PUNGENS	1	1	0	0.7
MACHAERANTHERA CANESCANS	0	2	1	1.0
SUBTOTAL				3.7
GRASS - PLANTED				
AGROPYRON SPECIES	5	9	0	4.7
BROMUS INERMIS	5	2	0	2.3
ORYZOPSIS HYMENOIDES	1	14	3	6.0
SUBTOTAL				13.0
GRASS - INVADED				
AGROPYRON CRISTATUM	0	0	4	1.3
BROMUS TECTORUM	2	3	3	2.7
SITANION HYSTRIX	1	0	0	0.3
SUBTOTAL				4.3
SHRUB - PLANTED				
ATRIPLEX CANESCENS	0	28	0	9.3
PURSHIA TRIDENTATA	0	1	0	0.3
RHUS TRILOBATA	1	0	0	0.3
SUBTOTAL				10.0
SHRUB - INVADED				
GUTIERREZIA SAROTHRAE	1	1	5	2.3
SUBTOTAL				2.3
TOTAL PLANTED SPECIES				32.3
TOTAL INVADED SPECIES				10.3
GRAND TOTAL				42.7

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 18
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS			TREATMENT PLOT AVERAGE
	#4	#5	#6	
FORB - PLANTED				
ASTRAGALUS CICER	0	1	3	1.3
MELILOTUS OFFICINALIS	1	0	0	0.3
SUBTOTAL				1.7
GRASS - PLANTED				
AGROPYRON SPECIES	9	3	6	6.0
AGROPYRON TRICHOPHORUM	3	5	11	6.3
BROMUS INERMIS	2	1	1	1.3
ORYZOPSIS HYMENOIDES	1	0	1	0.7
STIPA VIRIDULA	0	3	1	1.3
SUBTOTAL				15.7
GRASS - INVADED				
AGROPYRON CRISTATUM	0	1	0	0.3
BROMUS TECTORUM	5	3	1	3.0
POA SPECIES	6	9	0	5.0
SITANION HYSTRIX	5	0	0	1.7
SUBTOTAL				10.0
SHRUB - PLANTED				
ATRIPLEX CANESCENS	9	0	0	3.0
CERATOIDES LANATA	0	0	10	3.3
CHRYSOTHAMNUS NAUSEOSUS	0	0	2	0.7
SUBTOTAL				7.0
TOTAL PLANTED SPECIES				24.3
TOTAL INVADED SPECIES				10.0
GRAND TOTAL				34.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 19
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0	0	4	1.3
MELILOTUS OFFICINALIS	1	1	0	0.7
SUBTOTAL				2.0
FORB - INVADED				
CRYPTANTHA SERICEA	0	1	0	0.3
MACHAERANTHERA CANESCANS	2	0	0	0.7
SUBTOTAL				1.0
GRASS - PLANTED				
AGROPYRON SPECIES	3	10	16	9.7
AGROPYRON TRICHOPHORUM	0	6	0	2.0
ORYZOPSIS HYMENOIDES	7	0	1	2.7
STIPA VIRIDULA	0	2	1	1.0
SUBTOTAL				15.3
GRASS - INVADED				
BROMUS TECTORUM	12	1	0	4.3
SITANION HYSTRIX	2	0	0	0.7
SUBTOTAL				5.0
SHRUB - PLANTED				
ARTEMISIA TRIDENTATA	0	0	9	3.0
ATRIPLEX CANESCENS	0	14	0	4.7
CERATOIDES LANATA	0	13	9	7.3
KOCHIA PROSTRATA	2	0	0	0.7
PURSHIA TRIDENTATA	3	0	0	1.0
SUBTOTAL				16.7
TOTAL PLANTED SPECIES				34.0
TOTAL INVADED SPECIES				6.0
GRAND TOTAL				40.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 20
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	 #5	 #6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	6	4	2	4.0
MELILOTUS OFFICINALIS	1	1	0	0.7
SPHAERALCEA COCCINEA	0	3	0	1.0
SUBTOTAL				5.7
FORB - INVADED				
CRUCIFERAE SPECIES	1	0	0	0.3
PHYSARIA FLORIBUNDA	0	0	1	0.3
SUBTOTAL				0.7
GRASS - PLANTED				
AGROPYRON SPECIES	19	6	22	15.7
AGROPYRON TRICHOPHORUM	1	4	5	3.3
BROMUS INERMIS	2	1	1	1.3
ORYZOPSIS HYMENOIDES	0	3	0	1.0
STIPA VIRIDULA	1	0	4	1.7
SUBTOTAL				23.0
GRASS - INVADED				
AGROPYRON CRISTATUM	2	13	0	5.0
BROMUS TECTORUM	1	1	1	1.0
SUBTOTAL				6.0
SHRUB - PLANTED				
ATRIPLEX CANESCENS	0	26	13	13.0
CERATOIDES LANATA	5	0	8	4.3
CHRYSOTHAMNUS NAUSEOSUS	13	0	0	4.3
PURSHIA TRIDENTATA	0	0	1	0.3
SUBTOTAL				22.0
TOTAL PLANTED SPECIES				50.7
TOTAL INVADED SPECIES				6.7
GRAND TOTAL				57.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 21
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS			TREATMENT PLOT AVERAGE
	#4	#5	#6	
FORB - PLANTED				
ASTRAGALUS CICER	5	0	7	4.0
MELILOTUS OFFICINALIS	0	1	0	0.3
SUBTOTAL				4.3
FORB - INVADED				
MACHAERANTHERA CANESCANS	1	0	0	0.3
SUBTOTAL				0.3
GRASS - PLANTED				
AGROPYRON SPECIES	3	19	13	11.7
AGROPYRON TRICHOPHORUM	0	0	4	1.3
BROMUS INERMIS	0	3	1	1.3
ORYZOPSIS HYMENOIDES	2	0	1	1.0
STIPA VIRIDULA	0	2	3	1.7
SUBTOTAL				17.0
GRASS - INVADED				
AGROPYRON CRISTATUM	1	2	0	1.0
BROMUS TECTORUM	3	3	1	2.3
SITANION HYSTRIX	1	0	0	0.3
SUBTOTAL				3.7
SHRUB - PLANTED				
ATRIPLEX CANESCENS	0	9	1	3.3
CERATOIDES LANATA	18	0	8	8.7
CHRYSOTHAMNUS NAUSEOSUS	0	1	0	0.3
SUBTOTAL				12.3
TOTAL PLANTED SPECIES				33.7
TOTAL INVADED SPECIES				4.0
GRAND TOTAL				37.7

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 22
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0	22	8	10.0
MELILOTUS OFFICINALIS	0	0	3	1.0
SUBTOTAL				11.0
GRASS - PLANTED				
AGROPYRON SPECIES	2	7	7	5.3
AGROPYRON TRICHOPHORUM	0	9	8	5.7
BROMUS INERMIS	0	2	1	1.0
ORYZOPSIS HYMENOIDES	37	0	2	13.0
STIPA VIRIDULA	0	2	1	1.0
SUBTOTAL				26.0
GRASS - INVADED				
AGROPYRON CRISTATUM	1	0	0	0.3
BROMUS TECTORUM	1	1	1	1.0
SUBTOTAL				1.3
SHRUB - PLANTED				
ATRIPLEX CANESCENS	0	1	2	1.0
CERATOIDES LANATA	16	11	12	13.0
CERCOCARPUS MONTANUS	1	0	0	0.3
CHRYSOTHAMNUS NAUSEOSUS	1	0	0	0.3
PURSHIA TRIDENTATA	0	2	1	1.0
SUBTOTAL				15.7
SHRUB - INVADED				
GUTIERREZIA SAROTHRAE	6	0	0	2.0
KOCHIA PROSTRATA	0	1	0	0.3
SUBTOTAL				2.3
TOTAL PLANTED SPECIES				52.7
TOTAL INVADED SPECIES				3.7
GRAND TOTAL				56.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 23
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0	3	1	1.3
LINUM LEWISII	0	1	0	0.3
MELILOTUS OFFICINALIS	1	3	0	1.3
SUBTOTAL				3.0
FORB - INVADED				
PHYSARIA FLORIBUNDA	1	0	0	0.3
SUBTOTAL				0.3
GRASS - PLANTED				
AGROPYRON SPECIES	2	18	6	8.7
AGROPYRON TRICHOPHORUM	0	1	5	2.0
BROMUS INERMIS	3	1	0	1.3
ORYZOPSIS HYMENOIDES	4	4	2	3.3
STIPA VIRIDULA	0	0	4	1.3
SUBTOTAL				16.7
GRASS - INVADED				
AGROPYRON CRISTATUM	6	0	0	2.0
BROMUS TECTORUM	1	1	2	1.3
SUBTOTAL				3.3
SHRUB - PLANTED				
ATRIPLEX CANESCENS	0	16	7	7.7
CERATOIDES LANATA	26	7	1	11.3
CHRYSOTHAMNUS NAUSEOSUS	1	0	0	0.3
PURSHIA TRIDENTATA	0	0	2	0.7
SUBTOTAL				20.0
SHRUB - INVADED				
GUTIERREZIA SAROTHRAE	10	11	0	7.0
SUBTOTAL				7.0
TOTAL PLANTED SPECIES				39.7
TOTAL INVADED SPECIES				10.7
GRAND TOTAL				50.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 24
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0	10	3	4.3
LINUM LEWISII	0	0	1	0.3
MELILOTUS OFFICINALIS	4	1	1	2.0
SUBTOTAL				6.7
FORB - INVADED				
CRYPTANTHA SERICEA	1	0	0	0.3
SUBTOTAL				0.3
GRASS - PLANTED				
AGROPYRON SPECIES	5	8	24	12.3
AGROPYRON TRICHOPHORUM	3	6	4	4.3
BROMUS INERMIS	0	4	2	2.0
ORYZOPSIS HYMENOIDES	5	1	1	2.3
SUBTOTAL				21.0
GRASS - INVADED				
AGROPYRON CRISTATUM	0	0	1	0.3
BROMUS TECTORUM	0	0	1	0.3
SUBTOTAL				0.7
SHRUB - PLANTED				
CERATOIDES LANATA	21	8	19	16.0
PURSHIA TRIDENTATA	0	0	2	0.7
SUBTOTAL				16.7
SHRUB - INVADED				
GUTIERREZIA SAROTHRAE	1	7	0	2.7
KOCHIA PROSTRATA	1	0	0	0.3
SUBTOTAL				3.0
TOTAL PLANTED SPECIES				44.3
TOTAL INVADED SPECIES				4.0
GRAND TOTAL				48.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 25
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0	4	10	4.7
SUBTOTAL				4.7
FORB - INVADED				
MACHAERANTHERA CANESCANS	1	0	3	1.3
SUBTOTAL				1.3
GRASS - PLANTED				
AGROPYRON SPECIES	7	19	21	15.7
BROMUS INERMIS	3	6	3	4.0
ORYZOPSIS HYMENOIDES	0	0	1	0.3
STIPA VIRIDULA	0	2	2	1.3
SUBTOTAL				21.3
GRASS - INVADED				
AGROPYRON CRISTATUM	6	0	0	2.0
BROMUS TECTORUM	1	1	1	1.0
POA SPECIES	1	0	0	0.3
SITANION HYSTRIX	0	1	1	0.7
SUBTOTAL				4.0
SHRUB - PLANTED				
ARTEMISIA TRIDENTATA	13	0	0	4.3
ATRIPLEX CANESCENS	0	0	27	9.0
CERATOIDES LANATA	0	7	0	2.3
PURSHIA TRIDENTATA	0	0	1	0.3
SUBTOTAL				16.0
TOTAL PLANTED SPECIES				42.0
TOTAL INVADED SPECIES				5.3
GRAND TOTAL				47.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 26
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0	2	4	2.0
MELILOTUS OFFICINALIS	0	0	1	0.3
SUBTOTAL				2.3
GRASS - PLANTED				
AGROPYRON SPECIES	0	19	9	9.3
AGROPYRON TRICHOPHORUM	3	5	3	3.7
BROMUS INERMIS	1	1	3	1.7
STIPA VIRIDULA	0	1	2	1.0
SUBTOTAL				15.7
GRASS - INVADED				
AGROPYRON CRISTATUM	27	3	5	11.7
SUBTOTAL				11.7
SHRUB - PLANTED				
ATRIPLEX CANESCENS	0	9	0	3.0
CERATOIDES LANATA	0	8	0	2.7
CHRYSOTHAMNUS NAUSEOSUS	3	0	0	1.0
PURSHIA TRIDENTATA	0	1	4	1.7
SUBTOTAL				8.3
SHRUB - INVADED				
GUTIERREZIA SAROTHRAE	4	0	0	1.3
SUBTOTAL				1.3
TOTAL PLANTED SPECIES				26.3
TOTAL INVADED SPECIES				13.0
GRAND TOTAL				39.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 27
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	7	11	0	6.0
MELILOTUS OFFICINALIS	0	2	3	1.7
SUBTOTAL				7.7
FORB - INVADED				
UNKNOWN FORB	0	1	0	0.3
SUBTOTAL				0.3
GRASS - PLANTED				
AGROPYRON SPECIES	16	11	16	14.3
AGROPYRON TRICHOPHORUM	1	1	0	0.7
BROMUS INERMIS	1	1	3	1.7
ORYZOPSIS HYMENOIDES	0	0	2	0.7
STIPA VIRIDULA	2	4	5	3.7
SUBTOTAL				21.0
GRASS - INVADED				
AGROPYRON CRISTATUM	2	4	0	2.0
BROMUS TECTORUM	0	2	2	1.3
SUBTOTAL				3.3
SHRUB - PLANTED				
ATRIPLEX CANESCENS	0	16	0	5.3
CERATOIDES LANATA	8	2	0	3.3
CHRYSOTHAMNUS NAUSEOSUS	0	0	1	0.3
SUBTOTAL				9.0
SHRUB - INVADED				
GUTIERREZIA SAROTHRAE	0	0	1	0.3
SUBTOTAL				0.3
TOTAL PLANTED SPECIES				37.7
TOTAL INVADED SPECIES				4.0
GRAND TOTAL				41.7

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 28
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	7	21	16	14.7
MELILOTUS OFFICINALIS	2	2	1	1.7
SUBTOTAL				16.3
FORB - INVADED				
ASTER SPECIES	0	1	0	0.3
CRYPTANTHA SERICEA	1	0	0	0.3
SUBTOTAL				0.7
GRASS - PLANTED				
AGROPYRON SPECIES	6	13	14	11.0
AGROPYRON TRICHOPHORUM	2	2	2	2.0
BROMUS INERMIS	0	1	1	0.7
STIPA VIRIDULA	5	3	3	3.7
SUBTOTAL				17.3
GRASS - INVADED				
AGROPYRON CRISTATUM	6	4	2	4.0
BROMUS TECTORUM	1	2	1	1.3
SUBTOTAL				5.3
SHRUB - PLANTED				
ATRIPLEX CANESCENS	16	0	0	5.3
SUBTOTAL				5.3
SHRUB - INVADED				
GUTIERREZIA SAROTHRAE	0	0	21	7.0
SUBTOTAL				7.0
TOTAL PLANTED SPECIES				39.0
TOTAL INVADED SPECIES				13.0
GRAND TOTAL				52.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 29
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	12	2	0	4.7
MELILOTUS OFFICINALIS	1	0	0	0.3
SUBTOTAL				5.0
FORB - INVADED				
MACHAERANTHERA CANESCANS	0	0	1	0.3
SUBTOTAL				0.3
GRASS - PLANTED				
AGROPYRON SPECIES	13	16	3	10.7
AGROPYRON TRICHOPHORUM	0	1	0	0.3
BROMUS INERMIS	2	1	0	1.0
ORYZOPSIS HYMENOIDES	0	0	3	1.0
STIPA VIRIDULA	0	2	0	0.7
SUBTOTAL				13.7
GRASS - INVADED				
AGROPYRON CRISTATUM	10	6	3	6.3
BROMUS TECTORUM	1	0	3	1.3
SUBTOTAL				7.7
SHRUB - PLANTED				
ATRIPLEX CANESCENS	0	9	0	3.0
CERATOIDES LANATA	0	11	16	9.0
PURSHIA TRIDENTATA	2	3	0	1.7
SUBTOTAL				13.7
SHRUB - INVADED				
GUTIERREZIA SAROTHRAE	0	0	1	0.3
KOCHIA PROSTRATA	0	0	8	2.7
SUBTOTAL				3.0
TOTAL PLANTED SPECIES				32.3
TOTAL INVADED SPECIES				11.0
GRAND TOTAL				43.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 30
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS			TREATMENT PLOT AVERAGE
	#4	#5	#6	
FORB - PLANTED				
ASTRAGALUS CICER	12	4	0	5.3
LINUM LEWISII	3	0	0	1.0
MELILOTUS OFFICINALIS	0	1	0	0.3
SUBTOTAL				6.7
FORB - INVADED				
CRYPTANTHA SERICEA	1	0	0	0.3
LEPTODACTYLON PUNGENS	5	0	0	1.7
SUBTOTAL				2.0
GRASS - PLANTED				
AGROPYRON SPECIES	14	16	19	16.3
AGROPYRON TRICHOPHORUM	1	3	1	1.7
BROMUS INERMIS	1	1	0	0.7
STIPA VIRIDULA	2	0	2	1.3
SUBTOTAL				20.0
GRASS - INVADED				
AGROPYRON CRISTATUM	0	3	2	1.7
BROMUS TECTORUM	2	2	0	1.3
SITANION HYSTRIX	0	1	0	0.3
SUBTOTAL				3.3
SHRUB - PLANTED				
ATRIPLEX CANESCENS	0	10	7	5.7
CERATOIDES LANATA	25	5	11	13.7
PURSHIA TRIDENTATA	3	2	0	1.7
SUBTOTAL				21.0
TOTAL PLANTED SPECIES				47.7
TOTAL INVADED SPECIES				5.3
GRAND TOTAL				53.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 31
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	5	4	3	4.0
MELILOTUS OFFICINALIS	1	0	0	0.3
SUBTOTAL				4.3
FORB - INVADED				
CRYPTANTHA SERICEA	1	1	0	0.7
MACHAERANTHERA CANESCANS	0	2	0	0.7
SUBTOTAL				1.3
GRASS - PLANTED				
AGROPYRON TRICHOPHORUM	2	0	4	2.0
BROMUS INERMIS	1	2	3	2.0
ORYZOPSIS HYMENOIDES	1	0	0	0.3
STIPA VIRIDULA	0	3	0	1.0
SUBTOTAL				5.3
GRASS - INVADED				
BROMUS TECTORUM	1	0	1	0.7
SITANION HYSTRIX	0	2	0	0.7
SUBTOTAL				1.3
SHRUB - PLANTED				
CERATOIDES LANATA	0	0	9	3.0
SUBTOTAL				3.0
TOTAL PLANTED SPECIES				12.7
TOTAL INVADED SPECIES				2.7
GRAND TOTAL				15.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 32
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	3	8	1	4.0
LINUM LEWISII	1	0	0	0.3
MELILOTUS OFFICINALIS	0	0	1	0.3
SUBTOTAL				4.7
FORB - INVADED				
CRYPTANTHA SERICEA	0	0	1	0.3
MACHAERANTHERA CANESCANS	1	1	0	0.7
SUBTOTAL				1.0
GRASS - PLANTED				
AGROPYRON SPECIES	25	16	11	17.3
AGROPYRON TRICHOPHORUM	1	0	1	0.7
BROMUS INERMIS	2	4	0	2.0
ORYZOPSIS HYMENOIDES	1	3	0	1.3
STIPA VIRIDULA	2	0	0	0.7
SUBTOTAL				22.0
GRASS - INVADED				
AGROPYRON CRISTATUM	0	2	0	0.7
BROMUS TECTORUM	1	4	0	1.7
SITANION HYSTRIX	0	1	0	0.3
SUBTOTAL				2.7
SHRUB - PLANTED				
CERATOIDES LANATA	0	0	1	0.3
CHRYSOTHAMNUS NAUSEOSUS	0	0	43	14.3
PURSHIA TRIDENTATA	11	0	1	4.0
SUBTOTAL				18.7
TOTAL PLANTED SPECIES				45.3
TOTAL INVADED SPECIES				3.7
GRAND TOTAL				49.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 33
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0	0	23	7.7
MELILOTUS OFFICINALIS	1	3	0	1.3
SUBTOTAL				9.0
FORB - INVADED				
CRYPTANTHA SERICEA	0	1	1	0.7
HAPLOPAPPUS NUTTALLII	0	0	1	0.3
MACHAERANTHERA CANESCANS	1	0	0	0.3
PHYSARIA FLORIBUNDA	1	0	0	0.3
SUBTOTAL				1.7
GRASS - PLANTED				
AGROPYRON SPECIES	6	2	8	5.3
AGROPYRON TRICHOPHORUM	0	0	1	0.3
BROMUS INERMIS	0	0	1	0.3
ORYZOPSIS HYMENOIDES	2	2	0	1.3
STIPA VIRIDULA	0	0	1	0.3
SUBTOTAL				7.7
GRASS - INVADED				
BROMUS TECTORUM	2	2	0	1.3
SUBTOTAL				1.3
SHRUB - PLANTED				
CERATOIDES LANATA	0	1	8	3.0
CHRYSOTHAMNUS NAUSEOSUS	0	21	15	12.0
PURSHIA TRIDENTATA	0	1	0	0.3
SUBTOTAL				15.3
SHRUB - INVADED				
GUTIERREZIA SAROTHRAE	6	0	0	2.0
KOCHIA PROSTRATA	0	1	0	0.3
SUBTOTAL				2.3
TOTAL PLANTED SPECIES				32.0
TOTAL INVADED SPECIES				5.3
GRAND TOTAL				37.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 34
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0	2	9	3.7
MELILOTUS OFFICINALIS	1	0	0	0.3
SUBTOTAL				4.0
FORB - INVADED				
CRUCIFERAE SPECIES	1	0	0	0.3
PHYSARIA FLORIBUNDA	1	0	0	0.3
SUBTOTAL				0.7
GRASS - PLANTED				
AGROPYRON SPECIES	6	13	4	7.7
BROMUS INERMIS	1	1	4	2.0
ORYZOPSIS HYMENOIDES	1	1	4	2.0
STIPA VIRIDULA	1	1	2	1.3
SUBTOTAL				13.0
GRASS - INVADED				
BROMUS TECTORUM	2	1	1	1.3
SUBTOTAL				1.3
SHRUB - PLANTED				
ATRIPLEX CANESCENS	0	0	5	1.7
CERATOIDES LANATA	0	2	0	0.7
PURSHIA TRIDENTATA	3	0	0	1.0
SUBTOTAL				3.3
SHRUB - INVADED				
GUTIERREZIA SAROTHRAE	2	0	0	0.7
SUBTOTAL				0.7
TOTAL PLANTED SPECIES				20.3
TOTAL INVADED SPECIES				2.7
GRAND TOTAL				23.0

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 35
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0	11	0	3.7
MELILOTUS OFFICINALIS	1	0	1	0.7
SUBTOTAL				4.3
FORB - INVADED				
PHYSARIA FLORIBUNDA	0	0	1	0.3
SENECIO MULTILOBATUS	1	0	0	0.3
SUBTOTAL				0.7
GRASS - PLANTED				
AGROPYRON SPECIES	0	9	9	6.0
AGROPYRON TRICHOPHORUM	0	0	0	0.0
BROMUS INERMIS	3	1	11	5.0
ORYZOPSIS HYMENOIDES	0	0	1	0.3
SUBTOTAL				11.3
GRASS - INVADED				
AGROPYRON CRISTATUM	23	8	2	11.0
BROMUS TECTORUM	0	0	1	0.3
SUBTOTAL				11.3
SHRUB - PLANTED				
ATRIPLEX CANESCENS	0	8	0	2.7
PURSHIA TRIDENTATA	0	2	1	1.0
SUBTOTAL				3.7
TOTAL PLANTED SPECIES				19.3
TOTAL INVADED SPECIES				12.0
GRAND TOTAL				31.3

APPENDIX . PERCENT COVER OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 36
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
LINUM LEWISII	0	0	1	0.3
MELILOTUS OFFICINALIS	0	0	6	2.0
SUBTOTAL				2.3
FORB - INVADED				
HAPLOPAPPUS NUTTALLII	0	0	1	0.3
SENECIO MULTILOBATUS	0	0	1	0.3
SUBTOTAL				0.7
GRASS - PLANTED				
AGROPYRON SPECIES	11	14	23	16.0
AGROPYRON TRICHOPHORUM	0	3	0	1.0
BROMUS INERMIS	3	1	1	1.7
ORYZOPSIS HYMENOIDES	1	0	0	0.3
STIPA VIRIDULA	4	3	0	2.3
SUBTOTAL				21.3
GRASS - INVADED				
AGROPYRON CRISTATUM	1	1	1	1.0
BROMUS TECTORUM	1	7	2	3.3
SUBTOTAL				4.3
SHRUB - PLANTED				
ARTEMISIA TRIDENTATA	0	0	6	2.0
ATRIPLEX CANESCENS	17	29	0	15.3
CERATOIDES LANATA	0	2	8	3.3
PURSHIA TRIDENTATA	2	0	0	0.7
SUBTOTAL				21.3
SHRUB - INVADED				
GUTIERREZIA SAROTHRAE	0	1	0	0.3
SUBTOTAL				0.3
TOTAL PLANTED SPECIES				45.0
TOTAL INVADED SPECIES				5.3
GRAND TOTAL				50.3

Biomass Data

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 1
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0.0	0.0	14.0	4.7
SUBTOTAL				4.7
GRASS - PLANTED				
AGROPYRON SPECIES	65.3	16.5	17.1	33.0
AGROPYRON TRICHOPHORUM	64.0	87.3	66.4	72.6
BROMUS INERMIS	0.0	0.0	0.6	0.2
ORYZOPSIS HYMENOIDES	2.1	0.7	1.6	1.5
SUBTOTAL				107.2
GRASS - INVADED				
BROMUS TECTORUM	0.3	0.0	0.3	0.2
SUBTOTAL				0.2
TOTAL PLANTED SPECIES				111.9
TOTAL INVADED SPECIES				0.2
GRAND TOTAL				112.1

APPENDIX • BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 2
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	6.6	0.0	1.2	2.6
LINUM LEWISII	6.9	0.0	0.0	2.3
MELILOTUS OFFICINALIS	0.9	0.0	2.2	1.0
SUBTOTAL				5.9
FORB - INVADED				
SPHAERALCEA COCCINEA	0.0	0.6	0.0	0.2
SUBTOTAL				0.2
GRASS - PLANTED				
AGROPYRON SPECIES	43.8	9.5	2.2	18.5
AGROPYRON TRICHOPHORUM	56.9	55.3	51.9	54.7
BROMUS INERMIS	0.6	1.8	1.6	1.3
ORYZOPSIS HYMENOIDES	1.9	4.1	12.9	6.3
SUBTOTAL				80.8
GRASS - INVADED				
BROMUS TECTORUM	0.3	0.0	0.5	0.3
SUBTOTAL				0.3
TOTAL PLANTED SPECIES				86.8
TOTAL INVADED SPECIES				0.5
GRAND TOTAL				87.2

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 3
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0.0	14.1	2.2	5.4
SUBTOTAL				5.4
GRASS - PLANTED				
AGROPYRON SPECIES	84.6	20.2	19.8	41.5
AGROPYRON TRICHOPHORUM	62.6	63.3	58.3	61.4
BROMUS INERMIS	0.7	1.5	0.6	0.9
ORYZOPSIS HYMENOIDES	0.0	0.6	2.5	1.0
SUBTOTAL				104.9
GRASS - INVADED				
BROMUS TECTORUM	1.2	0.5	0.0	0.6
SUBTOTAL				0.6
TOTAL PLANTED SPECIES				110.3
TOTAL INVADED SPECIES				0.6
GRAND TOTAL				110.9

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 4
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	23.6	4.3	8.3	12.1
MELILOTUS OFFICINALIS	1.0	0.0	0.0	0.3
SUBTOTAL				12.4
GRASS - PLANTED				
AGROPYRON SPECIES	33.9	42.9	19.7	32.2
AGROPYRON TRICHOPHORUM	53.9	54.1	68.1	58.7
BROMUS INERMIS	7.2	2.3	1.4	3.6
ORYZOPSIS HYMENOIDES	11.7	1.9	8.7	7.4
SUBTOTAL				101.9
GRASS - INVADED				
BROMUS TECTORUM	1.3	2.0	0.0	1.1
SUBTOTAL				1.1
TOTAL PLANTED SPECIES				114.3
TOTAL INVADED SPECIES				1.1
GRAND TOTAL				115.4

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 5
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	SUBPLOTS #5	SUBPLOTS #6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	9.5	1.3	13.9	8.2
MELILOTUS OFFICINALIS	0.4	0.0	2.0	0.8
SUBTOTAL				9.0
FORB - INVADED				
UNKNOWN FORB	0.1	0.0	0.0	0.0
SUBTOTAL				0.0
GRASS - PLANTED				
AGROPYRON SPECIES	38.7	12.9	14.2	21.9
AGROPYRON TRICHOPHORUM	89.3	89.0	56.1	78.1
BROMUS INERMIS	2.4	1.2	1.1	1.6
ORYZOPSIS HYMENOIDES	3.5	5.8	3.4	4.2
SUBTOTAL				105.9
GRASS - INVADED				
BROMUS TECTORUM	0.1	0.0	0.0	0.0
SUBTOTAL				0.0
TOTAL PLANTED SPECIES				114.9
TOTAL INVADED SPECIES				0.1
GRAND TOTAL				115.0

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 6
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0.0	72.5	0.7	24.4
MELILOTUS OFFICINALIS	0.0	0.5	0.0	0.2
SUBTOTAL				24.6
FORB - INVADED				
CRUCIFERAE SPECIES	0.1	0.0	0.0	0.0
CRYPTANTHA SERICEA	0.0	3.6	0.0	1.2
SUBTOTAL				1.2
GRASS - PLANTED				
AGROPYRON SPECIES	10.2	7.1	12.0	9.8
AGROPYRON TRICHOPHORUM	78.1	7.4	58.8	48.1
BROMUS INERMIS	4.1	11.2	1.4	5.6
ORYZOPSIS HYMENOIDES	7.5	3.4	2.8	4.6
SUBTOTAL				68.0
GRASS - INVADED				
BROMUS TECTORUM	0.1	0.0	0.1	0.1
POA SPECIES	1.0	2.0	0.6	1.2
SUBTOTAL				1.3
TOTAL PLANTED SPECIES				92.6
TOTAL INVADED SPECIES				2.5
GRAND TOTAL				95.1

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 7
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0.1	0.0	0.3	0.1
MELILOTUS OFFICINALIS	2.9	0.1	0.5	1.2
SUBTOTAL				1.3
FORB - INVADED				
CRUCIFERAE SPECIES	1.1	0.0	0.0	0.4
MACHAERANTHERA CANESCANS	0.0	1.4	0.0	0.5
PHYSARIA FLORIBUNDA	0.0	0.0	0.1	0.0
SENECIO MULTILOBATUS	1.0	0.0	0.0	0.3
SUBTOTAL				1.2
GRASS - PLANTED				
AGROPYRON SPECIES	0.0	7.2	32.5	13.2
AGROPYRON TRICHOPHORUM	39.5	1.4	14.1	18.3
ASTER SPECIES	0.9	0.0	0.0	0.3
BROMUS INERMIS	10.0	0.1	2.1	4.1
ORYZOPSIS HYMENOIDES	36.5	7.3	3.2	15.7
STIPA VIRIDULA	0.0	0.0	0.5	0.2
SUBTOTAL				51.8
GRASS - INVADED				
BROMUS TECTORUM	3.5	0.0	0.1	1.2
SITANION HYSTRIX	0.1	0.0	0.0	0.0
SUBTOTAL				1.2
TOTAL PLANTED SPECIES				53.1
TOTAL INVADED SPECIES				2.4
GRAND TOTAL				55.5

APPENDIX • BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 8
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	42.2	19.5	24.4	28.7
MELILOTUS OFFICINALIS	0.3	0.1	0.5	0.3
SUBTOTAL				29.0
FORB - INVADED				
PHYSARIA FLORIBUNDA	0.0	0.5	0.0	0.2
UNKNOWN FORB	0.0	0.3	0.0	0.1
SUBTOTAL				0.3
GRASS - PLANTED				
AGROPYRON SPECIES	7.8	11.5	0.0	6.4
AGROPYRON TRICHOPHORUM	14.5	24.4	45.1	28.0
BROMUS INERMIS	8.0	0.0	0.2	2.7
ORYZOPSIS HYMENOIDES	1.4	7.7	0.4	3.2
SUBTOTAL				40.3
GRASS - INVADED				
BROMUS TECTORUM	0.1	0.0	0.0	0.0
POA SPECIES	2.3	0.0	0.0	0.8
SUBTOTAL				0.8
TOTAL PLANTED SPECIES				69.3
TOTAL INVADED SPECIES				1.1
GRAND TOTAL				70.4

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 9
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0.0	0.0	0.1	0.0
MELILOTUS OFFICINALIS	1.2	0.0	0.1	0.4
SUBTOTAL				0.5
FORB - INVADED				
LEPTODACTYLON PUNGENS	0.2	0.0	0.0	0.1
MACHAERANTHERA CANESCANS	4.5	0.0	0.0	1.5
SUBTOTAL				1.6
GRASS - PLANTED				
AGROPYRON SPECIES	0.8	1.3	18.4	6.8
AGROPYRON TRICHOPHORUM	0.0	0.0	54.3	18.1
BROMUS INERMIS	0.0	0.2	1.8	0.7
ORYZOPSIS HYMENOIDES	0.2	4.8	3.2	2.7
POA SPECIES	4.7	0.5	0.0	1.7
SUBTOTAL				30.1
GRASS - INVADED				
BROMUS TECTORUM	0.2	1.7	0.0	0.6
DACTYLIS GLOMERATA	6.5	30.2	0.0	12.2
STIPA COMATA	9.1	14.5	0.3	8.0
SUBTOTAL				20.8
TOTAL PLANTED SPECIES				30.5
TOTAL INVADED SPECIES				22.4
GRAND TOTAL				52.9

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 10
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	88.7	8.0	0.0	32.2
MELILOTUS OFFICINALIS	0.1	0.0	0.0	0.0
SUBTOTAL				32.3
FORB - INVADED				
CRYPTANTHA SERICEA	0.0	0.5	0.0	0.2
MACHAERANTHERA CANESCANS	2.0	0.0	0.0	0.7
UNKNOWN FORB	0.1	0.0	0.2	0.1
SUBTOTAL				0.9
GRASS - PLANTED				
AGROPYRON SPECIES	20.6	63.1	24.9	36.2
AGROPYRON TRICHOPHORUM	0.0	12.5	75.3	29.3
BROMUS INERMIS	2.1	0.7	0.0	0.9
ORYZOPSIS HYMENOIDES	2.9	29.9	3.2	12.0
SUBTOTAL				78.4
GRASS - INVADED				
AGROPYRON CRISTATUM	10.8	0.0	0.0	3.6
BROMUS TECTORUM	0.6	1.5	0.1	0.7
POA SPECIES	2.4	3.1	0.0	1.8
SUBTOTAL				6.2
TOTAL PLANTED SPECIES				110.7
TOTAL INVADED SPECIES				7.1
GRAND TOTAL				117.8

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 11
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	SUBPLOTS #5	SUBPLOTS #6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	25.8	12.7	28.6	22.4
MELILOTUS OFFICINALIS	0.0	10.7	5.6	5.4
SUBTOTAL				27.8
FORB - INVADED				
ASTER SPECIES	0.0	2.1	0.0	0.7
PHYSARIA FLORIBUNDA	0.0	0.5	0.0	0.2
UNKNOWN FORB	0.0	0.0	0.2	0.1
SUBTOTAL				0.9
GRASS - PLANTED				
AGROPYRON SPECIES	46.4	33.3	10.9	30.2
AGROPYRON TRICHOPHORUM	0.0	6.8	55.3	20.7
BROMUS INERMIS	0.0	0.1	1.6	0.6
ORYZOPSIS HYMENOIDES	37.2	0.5	4.8	14.2
STIPA VIRIDULA	0.0	2.8	0.0	0.9
SUBTOTAL				66.6
GRASS - INVADED				
BROMUS TECTORUM	6.4	1.2	0.1	2.6
SUBTOTAL				2.6
TOTAL PLANTED SPECIES				94.4
TOTAL INVADED SPECIES				3.5
GRAND TOTAL				97.9

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 12
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= HIGH SEEDING RATE (28 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	8.3	0.6	0.0	3.0
MELILOTUS OFFICINALIS	0.8	1.0	0.0	0.6
SUBTOTAL				3.6
FORB - INVADED				
CRYPTANTHA SERICEA	3.5	0.0	0.0	1.2
ERIOGONUM OVALIFOLIUM	0.0	1.7	0.0	0.6
SUBTOTAL				1.7
GRASS - PLANTED				
AGROPYRON SPECIES	59.9	40.0	22.9	40.9
AGROPYRON TRICHOPHORUM	64.1	42.8	62.0	56.3
BROMUS INERMIS	0.2	0.6	1.9	0.9
ORYZOPSIS HYMENOIDES	2.7	4.5	4.0	3.7
SUBTOTAL				101.9
GRASS - INVADED				
BROMUS TECTORUM	0.0	0.0	0.1	0.0
SITANION HYSTRIX	0.3	0.0	0.0	0.1
SUBTOTAL				0.1
TOTAL PLANTED SPECIES				105.4
TOTAL INVADED SPECIES				1.9
GRAND TOTAL				107.3

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 13
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	47.0	58.6	23.9	43.2
LINUM LEWISII	0.0	0.0	0.1	0.0
MELILOTUS OFFICINALIS	0.1	0.0	0.8	0.3
SUBTOTAL				43.5
FORB - INVADED				
UNKNOWN FORB	0.0	0.1	0.0	0.0
SUBTOTAL				0.0
GRASS - PLANTED				
AGROPYRON SPECIES	14.0	0.0	11.4	8.5
AGROPYRON TRICHOPHORUM	23.8	96.4	26.7	49.0
BROMUS INERMIS	0.0	4.1	0.5	1.5
ORYZOPSIS HYMENOIDES	25.9	0.4	19.6	15.3
STIPA VIRIDULA	0.0	0.0	6.3	2.1
SUBTOTAL				76.4
GRASS - INVADED				
AGROPYRON CRISTATUM	9.2	0.0	0.0	3.1
BROMUS TECTORUM	2.8	0.1	0.4	1.1
SITANION HYSTRIX	0.0	0.0	2.3	0.8
SUBTOTAL				4.9
TOTAL PLANTED SPECIES				119.9
TOTAL INVADED SPECIES				5.0
GRAND TOTAL				124.8

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 14
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	6.8	3.5	0.0	3.4
LINUM LEWISII	0.1	0.0	0.0	0.0
MELILOTUS OFFICINALIS	1.8	0.0	0.0	0.6
SUBTOTAL				4.1
FORB - INVADED				
PHYSARIA FLORIBUNDA	0.1	0.0	0.0	0.0
SUBTOTAL				0.0
GRASS - PLANTED				
AGROPYRON SPECIES	0.0	23.3	23.3	15.5
AGROPYRON TRICHOPHORUM	0.0	35.0	48.8	27.9
BROMUS INERMIS	7.0	0.1	0.1	2.4
ORYZOPSIS HYMENOIDES	0.6	2.1	0.7	1.1
STIPA VIRIDULA	0.0	10.6	0.0	3.5
SUBTOTAL				50.5
GRASS - INVADED				
AGROPYRON CRISTATUM	45.2	10.5	11.8	22.5
BROMUS TECTORUM	0.1	0.0	0.0	0.0
SUBTOTAL				22.5
TOTAL PLANTED SPECIES				54.6
TOTAL INVADED SPECIES				22.6
GRAND TOTAL				77.2

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 15
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	28.2	19.8	0.0	16.0
LINUM LEWISII	5.1	0.0	0.0	1.7
MELILOTUS OFFICINALIS	0.8	0.0	1.3	0.7
SUBTOTAL				18.4
FORB - INVADED				
MACHAERANTHERA CANESCANS	0.0	0.4	0.0	0.1
PHYSARIA FLORIBUNDA	0.0	0.5	0.0	0.2
SUBTOTAL				0.3
GRASS - PLANTED				
AGROPYRON SPECIES	47.4	84.6	25.1	52.4
AGROPYRON TRICHOPHORUM	6.9	0.0	63.2	23.4
BROMUS INERMIS	0.0	0.0	6.0	2.0
ORYZOPSIS HYMENOIDES	5.1	0.0	0.2	1.8
STIPA VIRIDULA	0.0	14.4	0.0	4.8
SUBTOTAL				84.3
GRASS - INVADED				
BROMUS TECTORUM	0.4	0.7	6.0	2.4
SUBTOTAL				2.4
TOTAL PLANTED SPECIES				102.7
TOTAL INVADED SPECIES				2.7
GRAND TOTAL				105.4

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 16
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS			TREATMENT PLOT AVERAGE
	#4	#5	#6	
FORB - PLANTED				
ASTRAGALUS CICER	13.9	3.2	4.3	7.1
MELILOTUS OFFICINALIS	0.1	0.0	0.2	0.1
SUBTOTAL				7.2
FORB - INVADED				
MACHAERANTHERA CANESCANS	0.1	0.9	0.0	0.3
SUBTOTAL				0.3
GRASS - PLANTED				
AGROPYRON SPECIES	18.1	22.6	17.7	19.5
AGROPYRON TRICHOPHORUM	0.0	0.0	41.7	13.9
BROMUS INERMIS	1.7	0.1	0.0	0.6
ORYZOPSIS HYMENOIDES	0.0	0.5	0.8	0.4
STIPA VIRIDULA	0.0	1.8	0.0	0.6
SUBTOTAL				35.0
GRASS - INVADED				
AGROPYRON CRISTATUM	45.9	78.9	4.8	43.2
SUBTOTAL				43.2
TOTAL PLANTED SPECIES				42.2
TOTAL INVADED SPECIES				43.5
GRAND TOTAL				85.8

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 17
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	24.2	2.8	0.0	9.0
LINUM LEWISII	0.0	0.2	0.0	0.1
MELILOTUS OFFICINALIS	5.6	3.9	7.1	5.5
SUBTOTAL				14.6
FORB - INVADED				
ASTER SPECIES	0.0	2.9	0.0	1.0
CRYPTANTHA SERICEA	1.3	0.0	6.1	2.5
LEPTODACTYLON PUNGENS	4.3	2.0	0.0	2.1
MACHAERANTHERA CANESCANS	0.0	1.2	0.6	0.6
SUBTOTAL				6.1
GRASS - PLANTED				
AGROPYRON SPECIES	42.8	47.0	0.0	29.9
BROMUS INERMIS	6.8	3.4	0.0	3.4
ORYZOPSIS HYMENOIDES	0.1	28.0	7.1	11.7
SUBTOTAL				45.1
GRASS - INVADED				
AGROPYRON CRISTATUM	0.0	0.0	3.2	1.1
BROMUS TECTORUM	1.3	1.7	1.0	1.3
SITANION HYSTRIX	3.3	0.0	0.0	1.1
SUBTOTAL				3.5
TOTAL PLANTED SPECIES				59.7
TOTAL INVADED SPECIES				9.6
GRAND TOTAL				69.3

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 18
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0.0	0.8	2.6	1.1
MELILOTUS OFFICINALIS	0.1	0.0	0.0	0.0
SUBTOTAL				1.2
GRASS - PLANTED				
AGROPYRON SPECIES	45.2	4.9	8.6	19.6
AGROPYRON TRICHOPHORUM	9.7	42.0	76.4	42.7
BROMUS INERMIS	2.2	0.8	0.6	1.2
ORYZOPSIS HYMENOIDES	1.7	0.0	3.6	1.8
STIPA VIRIDULA	0.0	6.0	0.6	2.2
SUBTOTAL				67.4
GRASS - INVADED				
AGROPYRON CRISTATUM	0.0	1.5	0.0	0.5
BROMUS TECTORUM	3.0	2.3	0.1	1.8
POA SPECIES	11.3	4.8	0.0	5.4
SITANION HYSTRIX	10.9	0.0	0.0	3.6
SUBTOTAL				11.3
TOTAL PLANTED SPECIES				68.6
TOTAL INVADED SPECIES				11.3
GRAND TOTAL				79.9

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 19
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0.0	0.0	4.6	1.5
MELILOTUS OFFICINALIS	0.6	0.1	0.0	0.2
SUBTOTAL				1.8
FORB - INVADED				
CRYPTANTHA SERICEA	0.0	1.9	0.0	0.6
MACHAERANTHERA CANESCANS	0.5	0.0	0.0	0.2
SUBTOTAL				0.8
GRASS - PLANTED				
AGROPYRON SPECIES	9.2	75.9	73.6	52.9
AGROPYRON TRICHOPHORUM	0.0	7.1	0.0	2.4
ORYZOPSIS HYMENOIDES	9.6	0.0	0.6	3.4
STIPA VIRIDULA	0.0	5.3	1.0	2.1
SUBTOTAL				60.8
GRASS - INVADED				
BROMUS TECTORUM	2.8	0.1	0.0	1.0
SITANION HYSTRIX	8.3	0.0	0.0	2.8
SUBTOTAL				3.7
TOTAL PLANTED SPECIES				62.5
TOTAL INVADED SPECIES				4.5
GRAND TOTAL				67.1

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 20
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	5.3	2.0	0.3	2.5
MELILOTUS OFFICINALIS	0.1	0.2	0.0	0.1
SPHAERALCEA COCCINEA	0.0	.	0.0	0.0
SUBTOTAL				2.6
FORB - INVADED				
CRUCIFERAE SPECIES	0.1	0.0	0.0	0.0
PHYSARIA FLORIBUNDA	0.0	0.0	0.1	0.0
SUBTOTAL				0.1
GRASS - PLANTED				
AGROPYRON SPECIES	58.6	26.9	83.0	56.2
AGROPYRON TRICHOPHORUM	4.8	32.1	14.2	17.0
BROMUS INERMIS	0.7	0.1	0.1	0.3
ORYZOPSIS HYMENOIDES	0.0	3.2	0.0	1.1
STIPA VIRIDULA	1.1	0.0	3.0	1.4
SUBTOTAL				75.9
GRASS - INVADED				
AGROPYRON CRISTATUM	1.8	33.1	0.0	11.6
BROMUS TECTORUM	0.2	0.1	0.1	0.1
SUBTOTAL				11.8
TOTAL PLANTED SPECIES				78.6
TOTAL INVADED SPECIES				11.8
GRAND TOTAL				90.4

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 21
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	6.7	0.0	4.2	3.6
MELILOTUS OFFICINALIS	0.0	0.1	0.0	0.0
SUBTOTAL				3.7
FORB - INVADED				
MACHAERANTHERA CANESCANS	2.4	0.0	0.0	0.8
SUBTOTAL				0.8
GRASS - PLANTED				
AGROPYRON SPECIES	8.2	44.3	41.9	31.5
AGROPYRON TRICHOPHORUM	0.0	0.0	18.5	6.2
BROMUS INERMIS	0.0	3.3	3.9	2.4
ORYZOPSIS HYMENOIDES	1.8	0.0	1.9	1.2
STIPA VIRIDULA	0.0	0.7	2.9	1.2
SUBTOTAL				42.5
GRASS - INVADED				
AGROPYRON CRISTATUM	0.4	1.5	0.0	0.6
BROMUS TECTORUM	0.3	0.2	0.1	0.2
SITANION HYSTRIX	0.2	0.0	0.0	0.1
SUBTOTAL				0.9
TOTAL PLANTED SPECIES				46.1
TOTAL INVADED SPECIES				1.7
GRAND TOTAL				47.8

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 22
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0.0	19.2	5.1	8.1
MELILOTUS OFFICINALIS	0.0	0.0	2.9	1.0
SUBTOTAL				9.1
GRASS - PLANTED				
AGROPYRON SPECIES	9.2	44.5	26.4	26.7
AGROPYRON TRICHOPHORUM	0.0	37.1	45.6	27.6
BROMUS INERMIS	0.0	0.3	1.1	0.5
ORYZOPSIS HYMENOIDES	89.5	0.0	2.4	30.6
STIPA VIRIDULA	0.0	1.7	2.0	1.2
SUBTOTAL				86.6
GRASS - INVADED				
AGROPYRON CRISTATUM	2.0	0.0	0.0	0.7
BROMUS TECTORUM	0.1	0.1	0.1	0.1
SUBTOTAL				0.8
TOTAL PLANTED SPECIES				95.7
TOTAL INVADED SPECIES				0.8
GRAND TOTAL				96.4

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 23
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0.0	2.8	0.7	1.2
LINUM LEWISII	0.0	2.0	0.0	0.7
MELILOTUS OFFICINALIS	0.1	0.3	0.0	0.1
SUBTOTAL				2.0
FORB - INVADED				
PHYSARIA FLORIBUNDA	2.0	0.0	0.0	0.7
SUBTOTAL				0.7
GRASS - PLANTED				
AGROPYRON SPECIES	2.2	51.8	27.4	27.1
AGROPYRON TRICHOPHORUM	0.0	3.8	9.1	4.3
BROMUS INERMIS	10.5	0.5	0.0	3.7
ORYZOPSIS HYMENOIDES	6.7	5.0	1.3	4.3
STIPA VIRIDULA	0.0	0.0	7.2	2.4
SUBTOTAL				41.8
GRASS - INVADED				
AGROPYRON CRISTATUM	24.9	0.0	0.0	8.3
BROMUS TECTORUM	0.4	0.1	1.7	0.7
SUBTOTAL				9.0
TOTAL PLANTED SPECIES				43.8
TOTAL INVADED SPECIES				9.7
GRAND TOTAL				53.5

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 24
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= MEDIUM SEEDING RATE (22 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0.0	12.8	2.2	5.0
LINUM LEWISII	0.0	0.0	0.6	0.2
MELILOTUS OFFICINALIS	6.2	0.1	0.5	2.3
SUBTOTAL				7.5
FORB - INVADED				
CRYPTANTHA SERICEA	0.1	0.0	0.0	0.0
SUBTOTAL				0.0
GRASS - PLANTED				
AGROPYRON SPECIES	30.6	46.1	78.1	51.6
AGROPYRON TRICHOPHORUM	32.1	22.9	33.5	29.5
BROMUS INERMIS	0.0	19.7	2.5	7.4
ORYZOPSIS HYMENOIDES	8.1	1.2	0.1	3.1
SUBTOTAL				91.6
GRASS - INVADED				
AGROPYRON CRISTATUM	0.0	0.0	0.3	0.1
BROMUS TECTORUM	0.0	0.0	0.1	0.0
SUBTOTAL				0.1
TOTAL PLANTED SPECIES				99.1
TOTAL INVADED SPECIES				0.2
GRAND TOTAL				99.3

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 25
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0.0	3.4	10.1	4.5
SUBTOTAL				4.5
FORB - INVADED				
MACHAERANTHERA CANESCANS	1.7	0.0	8.9	3.5
SUBTOTAL				3.5
GRASS - PLANTED				
AGROPYRON SPECIES	30.5	97.1	99.9	75.8
BROMUS INERMIS	6.4	9.3	3.6	6.4
ORYZOPSIS HYMENOIDES	0.0	0.0	0.1	0.0
STIPA VIRIDULA	0.0	1.9	4.6	2.2
SUBTOTAL				84.5
GRASS - INVADED				
AGROPYRON CRISTATUM	17.2	0.0	0.0	5.7
BROMUS TECTORUM	0.6	0.1	0.1	0.3
POA SPECIES	0.1	0.0	0.0	0.0
SITANION HYSTRIX	0.0	0.5	0.6	0.4
SUBTOTAL				6.4
TOTAL PLANTED SPECIES				89.0
TOTAL INVADED SPECIES				9.9
GRAND TOTAL				98.9

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 26
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0.0	0.3	4.1	1.5
MELILOTUS OFFICINALIS	0.0	0.0	0.1	0.0
SUBTOTAL				1.5
GRASS - PLANTED				
AGROPYRON SPECIES	0.0	79.6	52.8	44.1
AGROPYRON TRICHOPHORUM	16.5	23.4	0.1	13.3
BROMUS INERMIS	0.4	0.1	2.4	1.0
STIPA VIRIDULA	0.0	0.1	1.4	0.5
SUBTOTAL				58.9
GRASS - INVADED				
AGROPYRON CRISTATUM	28.8	7.6	7.6	14.7
SUBTOTAL				14.7
TOTAL PLANTED SPECIES				60.4
TOTAL INVADED SPECIES				14.7
GRAND TOTAL				75.1

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 27
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	8.8	13.9	0.0	7.6
MELILOTUS OFFICINALIS	0.0	1.1	2.8	1.3
SUBTOTAL				8.9
FORB - INVADED				
UNKNOWN FORB	0.0	0.1	0.0	0.0
SUBTOTAL				0.0
GRASS - PLANTED				
AGROPYRON SPECIES	63.1	64.7	70.0	65.9
AGROPYRON TRICHOPHORUM	3.1	0.1	0.0	1.1
BROMUS INERMIS	0.1	0.1	3.9	1.4
ORYZOPSIS HYMENOIDES	0.0	0.0	0.9	0.3
STIPA VIRIDULA	7.1	2.2	12.0	7.1
SUBTOTAL				75.8
GRASS - INVADED				
AGROPYRON CRISTATUM	6.2	2.5	0.0	2.9
BROMUS TECTORUM	0.0	0.1	0.2	0.1
SUBTOTAL				3.0
TOTAL PLANTED SPECIES				84.6
TOTAL INVADED SPECIES				3.0
GRAND TOTAL				87.7

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 28
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	SUBPLOTS #5	SUBPLOTS #6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	5.2	27.3	22.5	18.3
MELILOTUS OFFICINALIS	2.1	2.7	0.7	1.8
SUBTOTAL				20.2
FORB - INVADED				
ASTER SPECIES	0.0	0.1	0.0	0.0
CRYPTANTHA SERICEA	0.1	0.0	0.0	0.0
SUBTOTAL				0.1
GRASS - PLANTED				
AGROPYRON SPECIES	22.8	1.7	28.6	17.7
AGROPYRON TRICHOPHORUM	17.8	14.3	5.0	12.4
BROMUS INERMIS	0.0	0.5	1.1	0.5
STIPA VIRIDULA	7.6	4.0	6.9	6.2
SUBTOTAL				36.8
GRASS - INVADED				
AGROPYRON CRISTATUM	14.6	4.4	2.7	7.2
BROMUS TECTORUM	0.1	0.1	0.1	0.1
SUBTOTAL				7.3
TOTAL PLANTED SPECIES				56.9
TOTAL INVADED SPECIES				7.4
GRAND TOTAL				64.3

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 29
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	 #5	 #6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	10.7	0.3	0.0	3.7
MELILOTUS OFFICINALIS	2.2	0.0	0.0	0.7
SUBTOTAL				4.4
FORB - INVADED				
MACHAERANTHERA CANESCANS	0.0	0.0	5.2	1.7
SUBTOTAL				1.7
GRASS - PLANTED				
AGROPYRON SPECIES	44.8	55.0	7.8	35.9
AGROPYRON TRICHOPHORUM	0.0	9.7	0.0	3.2
BROMUS INERMIS	1.0	0.1	0.0	0.4
ORYZOPSIS HYMENOIDES	0.0	0.0	0.7	0.2
STIPA VIRIDULA	0.0	1.5	0.0	0.5
SUBTOTAL				40.2
GRASS - INVADED				
AGROPYRON CRISTATUM	7.8	21.0	7.1	12.0
BROMUS TECTORUM	0.1	0.0	1.2	0.4
SUBTOTAL				12.4
TOTAL PLANTED SPECIES				44.6
TOTAL INVADED SPECIES				14.1
GRAND TOTAL				58.7

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 30
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	19.7	3.0	0.0	7.6
LINUM LEWISII	4.6	0.0	0.0	1.5
MELILOTUS OFFICINALIS	0.0	0.1	0.0	0.0
SUBTOTAL				9.1
FORB - INVADED				
CRYPTANTHA SERICEA	1.0	0.0	0.0	0.3
LEPTODACTYLON PUNGENS	20.6	0.0	0.0	6.9
SUBTOTAL				7.2
GRASS - PLANTED				
AGROPYRON SPECIES	46.6	58.3	80.5	61.8
AGROPYRON TRICHOPHORUM	8.2	15.0	4.9	9.4
BROMUS INERMIS	0.1	0.1	0.0	0.1
STIPA VIRIDULA	2.3	0.0	1.3	1.2
SUBTOTAL				72.4
GRASS - INVADED				
AGROPYRON CRISTATUM	0.0	9.8	12.1	7.3
BROMUS TECTORUM	0.1	0.1	0.0	0.1
SITANION HYSTRIX	0.0	0.2	0.0	0.1
SUBTOTAL				7.4
TOTAL PLANTED SPECIES				81.6
TOTAL INVADED SPECIES				14.6
GRAND TOTAL				96.2

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 31
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	8.6	2.7	1.6	4.3
MELILOTUS OFFICINALIS	0.1	0.0	0.0	0.0
SUBTOTAL				4.3
FORB - INVADED				
CRYPTANTHA SERICEA	1.1	0.4	0.0	0.5
MACHAERANTHERA CANESCANS	0.0	3.8	0.0	1.3
SUBTOTAL				1.8
GRASS - PLANTED				
AGROPYRON TRICHOPHORUM	19.4	0.0	19.3	12.9
BROMUS INERMIS	0.1	5.6	7.6	4.4
ORYZOPSIS HYMENOIDES	0.9	0.0	0.0	0.3
STIPA VIRIDULA	0.0	9.7	0.0	3.2
SUBTOTAL				20.9
GRASS - INVADED				
BROMUS TECTORUM	0.1	0.0	0.1	0.1
SITANION HYSTRIX	0.0	1.4	0.0	0.5
SUBTOTAL				0.5
TOTAL PLANTED SPECIES				25.2
TOTAL INVADED SPECIES				2.3
GRAND TOTAL				27.5

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 32
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	3.2	15.1	0.1	6.1
LINUM LEWISII	0.1	0.0	0.0	0.0
MELILOTUS OFFICINALIS	0.0	0.0	0.1	0.0
SUBTOTAL				6.2
FORB - INVADED				
CRYPTANTHA SERICEA	0.0	0.0	0.1	0.0
MACHAERANTHERA CANESCANS	0.1	0.7	0.0	0.3
SUBTOTAL				0.3
GRASS - PLANTED				
AGROPYRON SPECIES	99.9	47.8	63.7	70.5
AGROPYRON TRICHOPHORUM	5.0	0.0	0.7	1.9
BROMUS INERMIS	4.3	12.3	0.0	5.5
ORYZOPSIS HYMENOIDES	0.6	5.6	0.0	2.1
STIPA VIRIDULA	5.0	0.0	0.0	1.7
SUBTOTAL				81.6
GRASS - INVADED				
AGROPYRON CRISTATUM	0.0	6.0	0.0	2.0
BROMUS TECTORUM	0.1	0.6	0.0	0.2
SITANION HYSTRIX	0.0	0.1	0.0	0.0
SUBTOTAL				2.3
TOTAL PLANTED SPECIES				87.8
TOTAL INVADED SPECIES				2.6
GRAND TOTAL				90.4

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 33
SUBSTRATE TREATMENT= PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HYDROMULCH (1.7 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0.0	0.0	52.4	17.5
MELILOTUS OFFICINALIS	1.0	2.1	0.0	1.0
SUBTOTAL				18.5
FORB - INVADED				
CRYPTANTHA SERICEA	0.0	0.5	0.6	0.4
HAPLOPAPPUS NUTTALLII	0.0	0.0	2.7	0.9
MACHAERANTHERA CANESCANS	0.4	0.0	0.0	0.1
PHYSARIA FLORIBUNDA	6.2	0.0	0.0	2.1
SUBTOTAL				3.5
GRASS - PLANTED				
AGROPYRON SPECIES	13.0	2.6	37.8	17.8
AGROPYRON TRICHOPHORUM	0.0	0.0	1.3	0.4
BROMUS INERMIS	0.0	0.0	2.3	0.8
ORYZOPSIS HYMENOIDES	0.9	1.2	0.0	0.7
STIPA VIRIDULA	0.0	0.0	3.5	1.2
SUBTOTAL				20.9
GRASS - INVADED				
BROMUS TECTORUM	0.6	0.5	0.0	0.4
SUBTOTAL				0.4
TOTAL PLANTED SPECIES				39.4
TOTAL INVADED SPECIES				3.8
GRAND TOTAL				43.2

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 34
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= NO MULCH

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0.0	2.1	12.3	4.8
MELILOTUS OFFICINALIS	0.1	0.0	0.0	0.0
SUBTOTAL				4.8
FORB - INVADED				
CRUCIFERAE SPECIES	0.4	0.0	0.0	0.1
PHYSARIA FLORIBUNDA	0.9	0.0	0.0	0.3
SUBTOTAL				0.4
GRASS - PLANTED				
AGROPYRON SPECIES	23.6	54.5	19.6	32.6
BROMUS INERMIS	0.1	0.5	3.4	1.3
ORYZOPSIS HYMENOIDES	0.5	0.5	2.5	1.2
STIPA VIRIDULA	3.0	1.1	1.7	1.9
SUBTOTAL				37.0
GRASS - INVADED				
BROMUS TECTORUM	1.6	0.1	0.2	0.6
SUBTOTAL				0.6
TOTAL PLANTED SPECIES				41.8
TOTAL INVADED SPECIES				1.1
GRAND TOTAL				42.9

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON
EXPERIMENTAL REVEGETATION PLOT R-3
REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 35
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
ASTRAGALUS CICER	0.0	16.1	0.0	5.4
MELILOTUS OFFICINALIS	0.1	0.0	0.2	0.1
SUBTOTAL				5.5
FORB - INVADED				
PHYSARIA FLORIBUNDA	0.0	0.0	0.2	0.1
SENECIO MULTILOBATUS	1.6	0.0	0.0	0.5
SUBTOTAL				0.6
GRASS - PLANTED				
AGROPYRON SPECIES	0.0	45.7	30.3	25.3
AGROPYRON TRICHOPHORUM	0.0	0.0	0.0	0.0
BROMUS INERMIS	2.5	1.1	10.4	4.7
ORYZOPSIS HYMENOIDES	0.0	0.0	0.1	0.0
SUBTOTAL				30.0
GRASS - INVADED				
AGROPYRON CRISTATUM	42.9	20.7	4.5	22.7
BROMUS TECTORUM	0.0	0.0	0.1	0.0
SUBTOTAL				22.7
TOTAL PLANTED SPECIES				35.5
TOTAL INVADED SPECIES				23.3
GRAND TOTAL				58.8

APPENDIX . BIOMASS (GM/M2) OF PLANT SPECIES SAMPLED ON EXPERIMENTAL REVEGETATION PLOT R-3

REPORT YEAR= 1982

SAMPLE PLOT NUMBER= 36
SUBSTRATE TREATMENT= NO PROCESSED SHALE
SEEDING TREATMENT= LOW SEEDING RATE (17 KG/HA)
MULCHING TREATMENT= HAY (4.5 MT/HA)

SPECIES	SUBPLOTS #4	#5	#6	TREATMENT PLOT AVERAGE
FORB - PLANTED				
LINUM LEWISII	0.0	0.0	2.6	0.9
MELILOTUS OFFICINALIS	0.0	0.0	0.1	0.0
SUBTOTAL				0.9
FORB - INVADED				
HAPLOPAPPUS NUTTALLII	0.0	0.0	1.3	0.4
SENECIO MULTILOBATUS	0.0	0.0	0.6	0.2
SUBTOTAL				0.6
GRASS - PLANTED				
AGROPYRON SPECIES	60.6	39.1	70.3	56.7
AGROPYRON TRICHOPHORUM	0.0	23.6	0.0	7.9
BROMUS INERMIS	2.2	1.5	0.3	1.3
ORYZOPSIS HYMENOIDES	0.3	0.0	0.0	0.1
STIPA VIRIDULA	6.8	7.3	0.0	4.7
SUBTOTAL				70.7
GRASS - INVADED				
AGROPYRON CRISTATUM	0.9	0.9	0.1	0.6
BROMUS TECTORUM	1.3	0.9	0.8	1.0
SUBTOTAL				1.6
TOTAL PLANTED SPECIES				71.6
TOTAL INVADED SPECIES				2.3
GRAND TOTAL				73.8

Trace Element Data

RIO BLANCO OIL SHALE COMPANY
EXPERIMENTAL REVEGETATION STUDIES - R3
PLANT TRACE ELEMENT CONCENTRATIONS (PPM)

SUBSTRATE= NO PROCESSED SHALE
SEEDING RATE= LOW SEEDING RATE (17 KG/HA)

SPECIES	ARSENIC (PPM)	BORON (PPM)	FLUORIDE (PPM)	MOLYBDENUM (PPM)	SELENIUM (PPM)
AGROPYRON TRICHOPHORUM	0.15	16.30	1.90	1.90	-0.10
ATRIPLEX CANESCENS	-0.10	44.50	5.80	1.00	0.10
CHRYSOTHAMNUS NAUSEOSUS	-0.10	55.50	4.60	2.00	-0.10
LINUM LEWISII	-0.10	23.50	3.70	1.40	-0.10
ORYZOPSIS HYMENOIDES	-0.10	18.10	1.80	1.40	-0.10

SUBSTRATE= NO PROCESSED SHALE
SEEDING RATE= MEDIUM SEEDING RATE (22 KG/HA)

SPECIES	ARSENIC (PPM)	BORON (PPM)	FLUORIDE (PPM)	MOLYBDENUM (PPM)	SELENIUM (PPM)
AGROPYRON TRICHOPHORUM	0.10	20.20	1.80	1.20	0.15
ATRIPLEX CANESCENS	-0.10	75.50	2.70	1.00	0.20
CHRYSOTHAMNUS NAUSEOSUS	-0.10	59.50	3.90	0.80	-0.10
LINUM LEWISII	-0.10	24.00	5.90	0.80	-0.10
ORYZOPSIS HYMENOIDES	-0.10	11.20	2.00	0.80	-0.10

SUBSTRATE= NO PROCESSED SHALE
SEEDING RATE= HIGH SEEDING RATE (28 KG/HA)

SPECIES	ARSENIC (PPM)	BORON (PPM)	FLUORIDE (PPM)	MOLYBDENUM (PPM)	SELENIUM (PPM)
AGROPYRON TRICHOPHORUM	0.15	18.80	2.00	1.20	-0.10
ATRIPLEX CANESCENS	0.15	45.30	2.70	8.40	0.10
CHRYSOTHAMNUS NAUSEOSUS	-0.10	49.70	4.50	0.30	-0.10
LINUM LEWISII	-0.10	26.20	2.80	1.00	-0.10
ORYZOPSIS HYMENOIDES	-0.10	11.20	2.00	1.20	-0.10

RIO BLANCO OIL SHALE COMPANY
EXPERIMENTAL REVEGETATION STUDIES - R3
PLANT TRACE ELEMENT CONCENTRATIONS (PPM)

SUBSTRATE= PROCESSED SHALE
SEEDING RATE= LOW SEEDING RATE (17 KG/HA)

SPECIES	ARSENIC (PPM)	BORON (PPM)	FLUORIDE (PPM)	MOLYBDENUM (PPM)	SELENIUM (PPM)
AGROPYRON TRICHOPHORUM	0.10	20.10	3.60	2.60	0.10
ATRIPLEX CANESCENS	-0.10	50.50	2.00	1.20	-0.10
CHRYSOTHAMNUS NAUSEOSUS	-0.10	30.40	4.40	0.90	-0.10
LINUM LEWISII	-0.10	25.00	3.00	0.90	-0.10
ORYZOPSIS HYMENOIDES	-0.10	13.50	3.10	1.50	-0.10

SUBSTRATE= PROCESSED SHALE
SEEDING RATE= MEDIUM SEEDING RATE (22 KG/HA)

SPECIES	ARSENIC (PPM)	BORON (PPM)	FLUORIDE (PPM)	MOLYBDENUM (PPM)	SELENIUM (PPM)
AGROPYRON TRICHOPHORUM	0.10	19.90	3.20	1.80	-0.10
ATRIPLEX CANESCENS	-0.10	53.00	2.20	1.30	0.10
CHRYSOTHAMNUS NAUSEOSUS	-0.10	43.70	2.50	1.50	-0.10
LINUM LEWISII	-0.10	30.20	4.30	1.90	-0.10
ORYZOPSIS HYMENOIDES	-0.10	11.00	2.40	0.70	-0.10

SUBSTRATE= PROCESSED SHALE
SEEDING RATE= HIGH SEEDING RATE (28 KG/HA)

SPECIES	ARSENIC (PPM)	BORON (PPM)	FLUORIDE (PPM)	MOLYBDENUM (PPM)	SELENIUM (PPM)
AGROPYRON TRICHOPHORUM	-0.10	19.40	1.20	2.30	-0.10
ATRIPLEX CANESCENS	-0.10	49.00	3.20	1.40	-0.10
CHRYSOTHAMNUS NAUSEOSUS	-0.10	44.40	3.10	1.10	-0.10
LINUM LEWISII	-0.10	33.80	3.80	1.20	-0.10
ORYZOPSIS HYMENOIDES	-0.10	14.10	1.50	1.30	-0.10

Soil Conductivity Data

RIO BLANCO OIL SHALE COMPANY
EXPERIMENTAL REVEGETATION STUDIES - R3
SOIL CONDUCTIVITY DATA - 1982
(1:2 SOIL/WATER EXTRACT)

SUBSTRATE= PROCESSED SHALE

REPLICATE	CONDUCTIVITY (MMHOS/CM) 0 CM	25 CM	50 CM
A	0.14	0.25	0.34
C	0.12	0.23	0.58
E	0.10	0.23	0.39
G	0.12	0.33	0.28
I	0.12	0.20	0.30
K	0.11	0.16	0.25

SUBSTRATE= NO PROCESSED SHALE

REPLICATE	CONDUCTIVITY (MMHOS/CM) 0 CM	25 CM	50 CM
B	0.13	0.25	0.37
D	0.13	0.29	0.39
F	0.13	0.29	0.44
H	0.13	0.18	0.37
J	0.10	0.14	0.35
L	0.12	0.11	0.20

Soil Chemistry Data

R-3 Experimental Revegetation Studies
Soil Chemistry Data

Substrate	Sample Depth (cm)	Sat.%[1]	pH[1]	Conductivity[1] mmhos/cm @ 25°C	Calcium[1] meq/l	Magnesium[1] meq/l	Sodium[1] meq/l	S.A.R.	Organic Matter %
Shale	0	36.4	7.3	0.6	5.4	0.8	1.9	1.1	1.1
Shale	25	41.2	8.1	0.6	3.2	0.6	3.7	2.7	1.0
Shale	50	33.3	7.9	1.0	2.6	0.4	8.9	7.3	0.5
No Shale	0	39.1	7.4	0.5	5.4	0.8	1.2	0.7	1.3
No Shale	25	40.7	7.5	0.5	2.6	0.4	2.7	2.2	1.0
No Shale	50	32.4	8.0	0.8	2.5	0.4	8.3	6.9	0.4
Processed Shale		40.4	8.0	15.8	23.0	135	131	14.7	3.4
Processed Shale		38.8	7.9	14.5	24.0	126	131	15.1	4.3

[1] Saturated Paste Procedure

Substrate	Sample Depth (cm)	Sand %	Silt %	Clay %	Texture
Shale	0	55	30	15	SL
Shale	25	56	29	15	SL
Shale	50	61	28	11	SL
No Shale	0	58	31	11	SL
No Shale	25	59	29	13	SL
No Shale	50	56	31	13	SL
Processed Shale		31	54	15	SiL
Processed Shale		30	55	15	SiL

R-3 Experimental Revegetation Studies
Soil Chemistry Data
(continued)

Substrate	Sample Depth (cm)	Arsenic[1] ppm	Boron[2] ppm	Fluoride[2] ppm	Molybdenum[3] ppm	Selenium[2] ppm
Shale	0	0.020	2.8	1.05	<0.5	<0.010
Shale	25	0.038	3.7	4.50	<0.5	0.015
Shale	50	0.020	3.2	3.45	<0.5	<0.010
No Shale	0	0.006	2.6	0.70	<0.5	<0.010
No Shale	25	0.012	2.2	0.70	<0.5	<0.010
No Shale	50	0.016	4.3	5.5	<0.5	<0.010
Processed Shale		0.324	6.2	27.5	6.0	<0.010
Processed Shale		0.348	6.2	32.7	8.0	<0.010

[1] AB-DTPA Extraction
[2] Hot Water Extraction
[3] Acid-Ammonium Oxalate Extraction

APPENDIX 6-1.6

Analyses for Plot R-3 Experimental Revegetation Data

Duncan's Multiple Range Test results for significant main effect differences as identical for analyses summarized on Table 6-11. Mulch designations are presented on Figure 6-3.

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                      RIO BLANCO OIL SHALE COMPANY
                     VEGETATION MONITORING PROGRAM
              EXPERIMENTAL REVEGETATION STUDIES - R3 COVER

                 THREE-WAY ANALYSIS OF VARIANCE COMPARING
                 SUBSTRATE, SEEDING, AND MULCH TREATMENTS
        FOR INVADED (NON-PLANTED) SPECIES (SUBPLOTS 4, 5, AND 6)
                REPORT YEAR=1982   GROWTH FORM=GRASS

                     GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=55  MSE=7.2E-04
HARMONIC MEAN OF CELL SIZES=24.068

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  MULCH

                A           0.030160     28  HAY MULCH
                A
        B       A           0.015366     23  HYDROMULCH
        B
        B                   0.013336     22  NO MULCH
```

Duncan's Multiple Range Test results for significant main effect differences as identified for analyses summarized on Table 6-12. Seeding, mulch and substrate designations are presented on Figure 6-3.

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                          RIO BLANCO OIL SHALE COMPANY
                         VEGETATION MONITORING PROGRAM
                  EXPERIMENTAL REVEGETATION STUDIES - R3 COVER

                    THREE-WAY ANALYSIS OF VARIANCE COMPARING
                    SUBSTRATE, SEEDING, AND MULCH TREATMENTS
                 FOR THE PLANTED SPECIES (SUBPLOTS 4, 5, AND 6)
               REPORT YEAR=1982   SPECIES=AGROPYRON TRICHOPHORUM

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=15  MSE=.0011385
HARMONIC MEAN OF CELL SIZES=10.9392

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  SEEDING

               A            0.10335      12  HIGH SEEDING

               B            0.04700      11  MEDIUM SEEDING

               C            0.01233      10  LOW SEEDING
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                          RIO BLANCO OIL SHALE COMPANY
                         VEGETATION MONITORING PROGRAM
                  EXPERIMENTAL REVEGETATION STUDIES - R3 COVER

                    THREE-WAY ANALYSIS OF VARIANCE COMPARING
                    SUBSTRATE, SEEDING, AND MULCH TREATMENTS
                 FOR THE PLANTED SPECIES (SUBPLOTS 4, 5, AND 6)
                  REPORT YEAR=1982   SPECIES=AGROPYRON SPECIES

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=17  MSE=.0027422
HARMONIC MEAN OF CELL SIZES=11.6471

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING             MEAN     N  SEEDING

               A           0.11826    11  LOW SEEDING
               A
        B      A           0.07904    12  MEDIUM SEEDING
        B
        B                  0.04726    12  HIGH SEEDING
```

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                          RIO BLANCO OIL SHALE COMPANY
                         VEGETATION MONITORING PROGRAM
                  EXPERIMENTAL REVEGETATION STUDIES - R3 COVER

                    THREE-WAY ANALYSIS OF VARIANCE COMPARING
                    SUBSTRATE, SEEDING, AND MULCH TREATMENTS
                 FOR THE PLANTED SPECIES (SUBPLOTS 4, 5, AND 6)
               REPORT YEAR=1982   SPECIES=CHRYSOTHAMNUS NAUSEOSUS

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=5  MSE=8.9E-05
HARMONIC MEAN OF CELL SIZES=4.65517

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                 MEAN         N  MULCH

               A            0.041571         9  HYDROMULCH

               B            0.015557         3  NO MULCH
               B
               B            0.014668         5  HAY MULCH
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                          RIO BLANCO OIL SHALE COMPANY
                         VEGETATION MONITORING PROGRAM
                   EXPERIMENTAL REVEGETATION STUDIES - R3 COVER

                     THREE-WAY ANALYSIS OF VARIANCE COMPARING
                     SUBSTRATE, SEEDING, AND MULCH TREATMENTS
                  FOR THE PLANTED SPECIES (SUBPLOTS 4, 5, AND 6)
                 REPORT YEAR=1982   SPECIES=CHRYSOTHAMNUS NAUSEOSUS

                           GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=5  MSE=8.9E-05
HARMONIC MEAN OF CELL SIZES=5.3617

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  SEEDING

               A           0.069363      4  LOW SEEDING

               B           0.018573      7  HIGH SEEDING
               B
               B           0.014447      6  MEDIUM SEEDING
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                            RIO BLANCO OIL SHALE COMPANY
                           VEGETATION MONITORING PROGRAM
                     EXPERIMENTAL REVEGETATION STUDIES - R3 COVER

                       THREE-WAY ANALYSIS OF VARIANCE COMPARING
                       SUBSTRATE, SEEDING, AND MULCH TREATMENTS
                    FOR THE PLANTED SPECIES (SUBPLOTS 4, 5, AND 6)
                  REPORT YEAR=1982   SPECIES=CHRYSOTHAMNUS NAUSEOSUS

                            GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=5  MSE=8.9E-05
HARMONIC MEAN OF CELL SIZES=7.76471

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING            MEAN      N  SUBSTRAT

                A        0.039771     11  PROCESSED SHALE

                B        0.009445      6  NO SHALE
```

Duncan's Multiple Range Test results for significant main effect differences as identified for analyses summarized on Table 6-13.

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                          RIO BLANCO OIL SHALE COMPANY
                          VEGETATION MONITORING PROGRAM
                  EXPERIMENTAL REVEGETATION STUDIES - R3 COVER

                     ONE-WAY ANALYSIS OF VARIANCE COMPARING
                       SAMPLING YEARS OVER ALL TREATMENTS
              GROWTH FORM=GRASS   PLANTED OR INVADED SPECIES=PLANTED

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=984  MSE=.0019432
HARMONIC MEAN OF CELL SIZES=164.642

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  RPTYR

              A            0.066843     156  1979

              B            0.053890     166  1980
              B
        C     B            0.048156     170  1981
        C
        C     D            0.039565     159  1982
              D
              D            0.036065     160  1978

              E            0.010840     179  1977
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                          RIO BLANCO OIL SHALE COMPANY
                         VEGETATION MONITORING PROGRAM
                  EXPERIMENTAL REVEGETATION STUDIES - R3 COVER

                     ONE-WAY ANALYSIS OF VARIANCE COMPARING
                       SAMPLING YEARS OVER ALL TREATMENTS
             GROWTH FORM=GRASS   PLANTED OR INVADED SPECIES=INVADED

                        GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=266  MSE=5.7E-04
HARMONIC MEAN OF CELL SIZES=35.5346

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN        N  RPTYR

               A           0.031399       39  1980
               A
       B       A           0.020428       73  1982
       B
       B       C           0.018629       58  1981
       B       C
       B       C           0.010132       54  1979
       B       C
       B       C           0.009376       16  1978
               C
               C           0.006876       32  1977
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                         RIO BLANCO OIL SHALE COMPANY
                         VEGETATION MONITORING PROGRAM
                  EXPERIMENTAL REVEGETATION STUDIES - R3 COVER

                     ONE-WAY ANALYSIS OF VARIANCE COMPARING
                       SAMPLING YEARS OVER ALL TREATMENTS
              GROWTH FORM=FORB   PLANTED OR INVADED SPECIES=PLANTED

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=559  MSE=.0010267
HARMONIC MEAN OF CELL SIZES=84.0627

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING            MEAN       N   RPTYR

                A         0.037739     70   1981
                A
        B       A         0.029976     80   1982
        B
        B       C         0.026988     56   1980
                C
        D       C         0.017407    105   1978
        D
        D                 0.016160    164   1977
        D
        D                 0.012894     90   1979
```

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                              RIO BLANCO OIL SHALE COMPANY
                             VEGETATION MONITORING PROGRAM
                      EXPERIMENTAL REVEGETATION STUDIES - R3 COVER

                          ONE-WAY ANALYSIS OF VARIANCE COMPARING
                            SAMPLING YEARS OVER ALL TREATMENTS
                    GROWTH FORM=SHRUB   PLANTED OR INVADED SPECIES=PLANTED

                              GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: COVER
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=646  MSE=.0011639
HARMONIC MEAN OF CELL SIZES=98.0689

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING            MEAN       N  RPTYR

               A         0.041211     148  1979
               A
               A         0.040637     121  1982

               B         0.023541      67  1981
               B
               B         0.021530     116  1978
               B
               B         0.021276      66  1980

               C         0.010201     134  1977
```

Duncan's Multiple Range Test results for significant main effect differences as identified for analyses summarized on Table 6-16. Seeding designations are presented on Figure 6-3.

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                        RIO BLANCO OIL SHALE COMPANY
                       VEGETATION MONITORING PROGRAM
                EXPERIMENTAL REVEGETATION STUDIES - R3 BIOMASS

                    THREE-WAY ANALYSIS OF VARIANCE COMPARING
                    SUBSTRATE, SEEDING, AND MULCH TREATMENTS
                            FOR THE PLANTED SPECIES
              REPORT YEAR=1982   SPECIES=AGROPYRON TRICHOPHORUM

                         GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: BIOMASS
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=15  MSE=3726.8
HARMONIC MEAN OF CELL SIZES=10.9392

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN       N  SEEDING

               A             191.58      12  HIGH SEEDING

               B             121.12      11  MEDIUM SEEDING

               C              17.10      10  LOW SEEDING
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                    RIO BLANCO OIL SHALE COMPANY
                    VEGETATION MONITORING PROGRAM
           EXPERIMENTAL REVEGETATION STUDIES - R3 BIOMASS

              THREE-WAY ANALYSIS OF VARIANCE COMPARING
              SUBSTRATE, SEEDING, AND MULCH TREATMENTS
                       FOR THE PLANTED SPECIES
          REPORT YEAR=1982   SPECIES=AGROPYRON SPECIES

                  GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: BIOMASS
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=17  MSE=7888.31
HARMONIC MEAN OF CELL SIZES=11.6471

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING               MEAN      N  SEEDING

               A              176.76     11  LOW SEEDING
               A
       B       A              122.36     12  MEDIUM SEEDING
       B
       B                       60.72     12  HIGH SEEDING
```

Duncan's Multiple Range Test results for significant main effect differences as identified for analyses summarized on Table 6-17. Mean values presented on Duncan's Multiple Range Test results may differ from those calculated from values presented on Table 6-14 (and used in the text) because the Duncan's test is based on individual species occurrences rather than averages for growth forms and/or treatment combinations.

```
                    RIO BLANCO OIL SHALE COMPANY
                   VEGETATION MONITORING PROGRAM
          EXPERIMENTAL REVEGETATION STUDIES - R3 BIOMASS

                 ONE-WAY ANALYSIS OF VARIANCE COMPARING
                   SAMPLING YEARS OVER ALL TREATMENTS
        GROWTH FORM=FORB   PLANTED OR INVADED SPECIES=PLANTED

                     GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: BIOMASS
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=168  MSE=29296.7
HARMONIC MEAN OF CELL SIZES=84.7059

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  RPTYR

                A            135.46     80  1982

                B             42.37     90  1979
```

t-test Procedure comparing soil conductivity between shale-no shale substrates for three sample depths within the reconstructed soil profile.

```
                              RIO BLANCO OIL SHALE COMPANY
                             VEGETATION MONITORING PROGRAM
                      EXPERIMENTAL REVEGETATION STUDIES - SITE R-3
                                    REPORT YEAR=1982

                                    TTEST PROCEDURE

VARIABLE: D00             0 CM DEPTH

SUBSTRAT                  N                MEAN           STD DEV          STD ERROR

NO PROCESSED SHA          6          0.12333333        0.01211060         0.00494413
PROCESSED SHALE           6          0.11833333        0.01329160         0.00542627

VARIANCES          T          DF   PROB > |T|

UNEQUAL       0.6811         9.9       0.5114
EQUAL         0.6811        10.0       0.5113

FOR H0: VARIANCES ARE EQUAL, F'=    1.20 WITH 5 AND 5 DF      PROB > F'= 0.8432
--------------------------------------------------------------------------------

VARIABLE: D25             25 CM DEPTH

SUBSTRAT                  N                MEAN           STD DEV          STD ERROR

NO PROCESSED SHA          6          0.21000000        0.07771744         0.03172801
PROCESSED SHALE           6          0.23333333        0.05680376         0.02319004

VARIANCES          T          DF   PROB > |T|

UNEQUAL      -0.5937         9.2       0.5671
EQUAL        -0.5937        10.0       0.5659

FOR H0: VARIANCES ARE EQUAL, F'=    1.87 WITH 5 AND 5 DF      PROB > F'= 0.5080
--------------------------------------------------------------------------------

VARIABLE: D50             50 CM DEPTH

SUBSTRAT                  N                MEAN           STD DEV          STD ERROR

NO PROCESSED SHA          6          0.35333333        0.08115828         0.03313273
PROCESSED SHALE           6          0.35666667        0.11977757         0.04889899

VARIANCES          T          DF   PROB > |T|

UNEQUAL      -0.0564         8.8       0.9563
EQUAL        -0.0564        10.0       0.9561

FOR H0: VARIANCES ARE EQUAL, F'=    2.18 WITH 5 AND 5 DF      PROB > F'= 0.4130
```

t-test Procedure comparing trace element concentrations in vegetation samples between shale-no shale substrates.

```
                          RIO BLANCO OIL SHALE COMPANY
                  EXPERIMENTAL REVEGETATION MONITORING PROGRAM
                            PLANT SAMPLE ANALYSES
                          ARSENIC - ABSOLUTE VALUES
                        SPECIES=AGROPYRON TRICHOPHORUM

                               TTEST PROCEDURE

VARIABLE: ABS_AS       ARSENIC

SUBST        N          MEAN       STD DEV     STD ERROR       MINIMUM       MAXIMUM

    1        3    0.13333333    0.02886751    0.01666667    0.10000000    0.15000000
    2        3    0.10000000    0.00000000    0.00000000    0.10000000    0.10000000

VARIANCES         T        DF   PROB > |T|

UNEQUAL      2.0000       2.0       0.1835
EQUAL        2.0000       4.0       0.1161

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.

------------------------- SPECIES=ATRIPLEX CANESCENS ------------------------

VARIABLE: ABS_AS       ARSENIC

SUBST        N          MEAN       STD DEV     STD ERROR       MINIMUM       MAXIMUM

    1        3    0.11666667    0.02886751    0.01666667    0.10000000    0.15000000
    2        3    0.10000000    0.00000000    0.00000000    0.10000000    0.10000000

VARIANCES         T        DF   PROB > |T|

UNEQUAL      1.0000       2.0       0.4226
EQUAL        1.0000       4.0       0.3739

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.

---------------------- SPECIES=CHRYSOTHAMNUS NAUSEOSUS ---------------------

VARIABLE: ABS_AS       ARSENIC

SUBST        N          MEAN       STD DEV     STD ERROR       MINIMUM       MAXIMUM

    1        3    0.10000000             0             0    0.10000000    0.10000000
    2        3    0.10000000             0             0    0.10000000    0.10000000

VARIANCES         T        DF   PROB > |T|

UNEQUAL           .         .            .
EQUAL             .       4.0            .

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.
```

```
                         RIO BLANCO OIL SHALE COMPANY
                  EXPERIMENTAL REVEGETATION MONITORING PROGRAM
                             PLANT SAMPLE ANALYSES
                           ARSENIC - ABSOLUTE VALUES
                             SPECIES=LINUM LEWISII

                                TTEST PROCEDURE

VARIABLE: ABS_AS       ARSENIC

SUBST       N         MEAN       STD DEV    STD ERROR       MINIMUM       MAXIMUM

    1       3   0.10000000             0            0    0.10000000    0.10000000
    2       3   0.10000000             0            0    0.10000000    0.10000000

VARIANCES         T        DF   PROB > |T|

UNEQUAL           .         .            .
EQUAL             .       4.0            .

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.

------------------------- SPECIES=ORYZOPSIS HYMENOIDES ------------------------

VARIABLE: ABS_AS       ARSENIC

SUBST       N         MEAN       STD DEV    STD ERROR       MINIMUM       MAXIMUM

    1       3   0.10000000             0            0    0.10000000    0.10000000
    2       3   0.10000000             0            0    0.10000000    0.10000000

VARIANCES         T        DF   PROB > |T|

UNEQUAL           .         .            .
EQUAL             .       4.0            .

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.
```

```
                            RIO BLANCO OIL SHALE COMPANY
                     EXPERIMENTAL REVEGETATION MONITORING PROGRAM
                               PLANT SAMPLE ANALYSES
                              BORON - ABSOLUTE VALUES
                           SPECIES=AGROPYRON TRICHOPHORUM

                                  TTEST PROCEDURE

VARIABLE: ABS_B          BORON

SUBST         N           MEAN        STD DEV     STD ERROR        MINIMUM        MAXIMUM

    1         3   18.43333333    1.97568554    1.14066258    16.30000000    20.20000000
    2         3   19.80000000    0.36055513    0.20816660    19.40000000    20.10000000

VARIANCES          T         DF   PROB > |T|

UNEQUAL     -1.1787         2.1       0.3549
EQUAL       -1.1787         4.0       0.3039

FOR HO: VARIANCES ARE EQUAL, F'=    30.03 WITH 2 AND 2 DF       PROB > F'= 0.0645

------------------------ SPECIES=ATRIPLEX CANESCENS ------------------------

VARIABLE: ABS_B          BORON

SUBST         N           MEAN        STD DEV     STD ERROR        MINIMUM        MAXIMUM

    1         3   55.10000000   17.67144589   10.20261404    44.50000000    75.50000000
    2         3   50.83333333    2.02072594    1.16666667    49.00000000    53.00000000

VARIANCES          T         DF   PROB > |T|

UNEQUAL      0.4155         2.1       0.7175
EQUAL        0.4155         4.0       0.6991

FOR HO: VARIANCES ARE EQUAL, F'=    76.48 WITH 2 AND 2 DF       PROB > F'= 0.0258

---------------------- SPECIES=CHRYSOTHAMNUS NAUSEOSUS ---------------------

VARIABLE: ABS_B          BORON

SUBST         N           MEAN        STD DEV     STD ERROR        MINIMUM        MAXIMUM

    1         3   54.90000000    4.92747400    2.84487844    49.70000000    59.50000000
    2         3   39.50000000    7.88859937    4.55448497    30.40000000    44.40000000

VARIANCES          T         DF   PROB > |T|

UNEQUAL      2.8678         3.4       0.0576
EQUAL        2.8678         4.0       0.0456

FOR HO: VARIANCES ARE EQUAL, F'=     2.56 WITH 2 AND 2 DF       PROB > F'= 0.5613
```

```
                              RIO BLANCO OIL SHALE COMPANY
                       EXPERIMENTAL REVEGETATION MONITORING PROGRAM
                                 PLANT SAMPLE ANALYSES
                                BORON - ABSOLUTE VALUES
                                 SPECIES=LINUM LEWISII

                                    TTEST PROCEDURE

VARIABLE: ABS_B         BORON

SUBST         N          MEAN         STD DEV     STD ERROR       MINIMUM        MAXIMUM

    1         3   24.56666667    1.43643076    0.82932369   23.50000000    26.20000000
    2         3   29.66666667    4.42417601    2.55429921   25.00000000    33.80000000

VARIANCES          T         DF   PROB > |T|

UNEQUAL     -1.8990        2.4       0.1795
EQUAL       -1.8990        4.0       0.1304

FOR HO: VARIANCES ARE EQUAL, F'=     9.49 WITH 2 AND 2 DF      PROB > F'= 0.1907

------------------------ SPECIES=ORYZOPSIS HYMENOIDES ----------------------

VARIABLE: ABS_B         BORON

SUBST         N          MEAN         STD DEV     STD ERROR       MINIMUM        MAXIMUM

    1         3   13.50000000    3.98371686    2.30000000   11.20000000    18.10000000
    2         3   12.86666667    1.64418166    0.94926872   11.00000000    14.10000000

VARIANCES          T         DF   PROB > |T|

UNEQUAL      0.2545        2.7       0.8180
EQUAL        0.2545        4.0       0.8116

FOR HO: VARIANCES ARE EQUAL, F'=     5.87 WITH 2 AND 2 DF      PROB > F'= 0.2911
```

```
                              RIO BLANCO OIL SHALE COMPANY
                     EXPERIMENTAL REVEGETATION MONITORING PROGRAM
                                 PLANT SAMPLE ANALYSES
                               FLUORIDE - ABSOLUTE VALUES
                             SPECIES=AGROPYRON TRICHOPHORUM

                                    TTEST PROCEDURE

VARIABLE: ABS_F          FLUORIDE

SUBST         N            MEAN          STD DEV      STD ERROR        MINIMUM         MAXIMUM

    1         3      1.90000000       0.10000000     0.05773503     1.80000000      2.00000000
    2         3      2.66666667       1.28582010     0.74236858     1.20000000      3.60000000

VARIANCES          T          DF    PROB > |T|

UNEQUAL      -1.0296         2.0        0.4106
EQUAL        -1.0296         4.0        0.3614

FOR H0: VARIANCES ARE EQUAL, F'=   165.33 WITH 2 AND 2 DF       PROB > F'= 0.0120

------------------------ SPECIES=ATRIPLEX CANESCENS ------------------------

VARIABLE: ABS_F          FLUORIDE

SUBST         N            MEAN          STD DEV      STD ERROR        MINIMUM         MAXIMUM

    1         3      3.73333333       1.78978583     1.03333333     2.70000000      5.80000000
    2         3      2.46666667       0.64291005     0.37118429     2.00000000      3.20000000

VARIANCES          T          DF    PROB > |T|

UNEQUAL       1.1536         2.5        0.3498
EQUAL         1.1536         4.0        0.3129

FOR H0: VARIANCES ARE EQUAL, F'=     7.75 WITH 2 AND 2 DF       PROB > F'= 0.2286

---------------------- SPECIES=CHRYSOTHAMNUS NAUSEOSUS ---------------------

VARIABLE: ABS_F          FLUORIDE

SUBST         N            MEAN          STD DEV      STD ERROR        MINIMUM         MAXIMUM

    1         3      4.33333333       0.37859389     0.21858128     3.90000000      4.60000000
    2         3      3.33333333       0.97125349     0.56075346     2.50000000      4.40000000

VARIANCES          T          DF    PROB > |T|

UNEQUAL       1.6615         2.6        0.2128
EQUAL         1.6615         4.0        0.1719

FOR H0: VARIANCES ARE EQUAL, F'=     6.58 WITH 2 AND 2 DF       PROB > F'= 0.2638
```

```
                                RIO BLANCO OIL SHALE COMPANY
                         EXPERIMENTAL REVEGETATION MONITORING PROGRAM
                                   PLANT SAMPLE ANALYSES
                                 FLUORIDE - ABSOLUTE VALUES
                                   SPECIES=LINUM LEWISII

                                      TTEST PROCEDURE

VARIABLE: ABS_F         FLUORIDE

SUBST        N           MEAN        STD DEV      STD ERROR        MINIMUM         MAXIMUM

    1        3     4.13333333     1.59478316     0.92074849     2.80000000      5.90000000
    2        3     3.70000000     0.65574385     0.37859389     3.00000000      4.30000000

VARIANCES         T         DF    PROB > |T|

UNEQUAL      0.4353        2.7        0.6973
EQUAL        0.4353        4.0        0.6858

FOR H0: VARIANCES ARE EQUAL, F'=     5.91 WITH 2 AND 2 DF      PROB > F'= 0.2892

------------------------ SPECIES=ORYZOPSIS HYMENOIDES ----------------------

VARIABLE: ABS_F         FLUORIDE

SUBST        N           MEAN        STD DEV      STD ERROR        MINIMUM         MAXIMUM

    1        3     1.93333333     0.11547005     0.06666667     1.80000000      2.00000000
    2        3     2.33333333     0.80208063     0.46308147     1.50000000      3.10000000

VARIANCES         T         DF    PROB > |T|

UNEQUAL     -0.8550        2.1        0.4804
EQUAL       -0.8550        4.0        0.4408

FOR H0: VARIANCES ARE EQUAL, F'=    48.25 WITH 2 AND 2 DF      PROB > F'= 0.0406
```

```
                         RIO BLANCO OIL SHALE COMPANY
                 EXPERIMENTAL REVEGETATION MONITORING PROGRAM
                            PLANT SAMPLE ANALYSES
                         MOLYBDENUM - ABSOLUTE VALUES
                       SPECIES=AGROPYRON TRICHOPHORUM

                               TTEST PROCEDURE

VARIABLE: ABS_MO        MOLYBDENUM

SUBST        N           MEAN        STD DEV     STD ERROR       MINIMUM        MAXIMUM

   1         3    1.43333333    0.40414519    0.23333333    1.20000000     1.90000000
   2         3    2.23333333    0.40414519    0.23333333    1.80000000     2.60000000

VARIABLES           T          DF   PROB > |T|

UNEQUAL     -2.4244         4.0        0.0724
EQUAL       -2.4244         4.0        0.0724

FOR HO: VARIANCES ARE EQUAL, F'=    1.00 WITH 2 AND 2 DF      PROB > F'= 1.0000

------------------------- SPECIES=ATRIPLEX CANESCENS -----------------------

VARIABLE: ABS_MO        MOLYBDENUM

SUBST        N           MEAN        STD DEV     STD ERROR       MINIMUM        MAXIMUM

   1         3    3.46666667    4.27239199    2.46666667    1.00000000     8.40000000
   2         3    1.30000000    0.10000000    0.05773503    1.20000000     1.40000000

VARIANCES           T          DF   PROB > |T|

UNEQUAL      0.8781         2.0        0.4724
EQUAL        0.8781         4.0        0.4295

FOR HO: VARIANCES ARE EQUAL, F'= 1825.33 WITH 2 AND 2 DF      PROB > F'= 0.0011

----------------------- SPECIES=CHRYSOTHAMNUS NAUSEOSUS ---------------------

VARIABLE: ABS_MO        MOLYBDENUM

SUBST        N           MEAN        STD DEV     STD ERROR       MINIMUM        MAXIMUM

   1         3    1.03333333    0.87368949    0.50442487    0.30000000     2.00000000
   2         3    1.16666667    0.30550505    0.17638342    0.90000000     1.50000000

VARIANCES           T          DF   PROB > |T|

UNEQUAL     -0.2495         2.5        0.8228
EQUAL       -0.2495         4.0        0.8153

FOR HO: VARIANCES ARE EQUAL, F'=    8.18 WITH 2 AND 2 DF      PROB > F'= 0.2179
```

```
                              RIO BLANCO OIL SHALE COMPANY
                     EXPERIMENTAL REVEGETATION MONITORING PROGRAM
                                PLANT SAMPLE ANALYSES
                             MOLYBDENUM - ABSOLUTE VALUES
                                SPECIES=LINUM LEWISII

                                   TTEST PROCEDURE

VARIABLE: ABS_MO        MOLYBDENUM

SUBST         N          MEAN        STD DEV     STD ERROR       MINIMUM       MAXIMUM

    1         3   1.06666667   0.30550505   0.17638342    0.80000000    1.40000000
    2         3   1.33333333   0.51316014   0.29627315    0.90000000    1.90000000

VARIANCES          T        DF  PROB > |T|

UNEQUAL     -0.7734       3.3      0.4922
EQUAL       -0.7734       4.0      0.4825

FOR HO: VARIANCES ARE EQUAL, F'=    2.82 WITH 2 AND 2 DF      PROB > F'= 0.5234

------------------------ SPECIES=ORYZOPSIS HYMENOIDES ------------------------

VARIABLE: ABS_MO        MOLYBDENUM

SUBST         N          MEAN        STD DEV     STD ERROR       MINIMUM       MAXIMUM

    1         3   1.13333333   0.30550505   0.17638342    0.80000000    1.40000000
    2         3   1.16666667   0.41633320   0.24037009    0.70000000    1.50000000

VARIANCES          T        DF  PROB > |T|

UNEQUAL     -0.1118       3.7      0.9169
EQUAL       -0.1118       4.0      0.9164

FOR HO: VARIANCES ARE EQUAL, F'=    1.86 WITH 2 AND 2 DF      PROB > F'= 0.7000
```

```
                              RIO BLANCO OIL SHALE COMPANY
                       EXPERIMENTAL REVEGETATION MONITORING PROGRAM
                                 PLANT SAMPLE ANALYSES
                               SELENIUM - ABSOLUTE VALUES
                             SPECIES=AGROPYRON TRICHOPHORUM

                                    TTEST PROCEDURE

VARIABLE: ABS_SE       SELENIUM

SUBST        N          MEAN       STD DEV     STD ERROR       MINIMUM       MAXIMUM

    1        1    0.15000000             .             .    0.15000000    0.15000000
    2        1    0.10000000             .             .    0.10000000    0.10000000

VARIANCES          T         DF   PROB > |T|

UNEQUAL            .          .            .
EQUAL              .        0.0            .

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.

-------------------------- SPECIES=ATRIPLEX CANESCENS -------------------------

VARIABLE: ABS_SE       SELENIUM

SUBST        N          MEAN       STD DEV     STD ERROR       MINIMUM       MAXIMUM

    1        3    0.13333333    0.05773503    0.03333333    0.10000000    0.20000000
    2        1    0.10000000    .             .             0.10000000    0.10000000

VARIANCES          T         DF   PROB > |T|

UNEQUAL            .          .            .
EQUAL         0.5000        2.0       0.6667

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.

----------------------- SPECIES=CHRYSOTHAMNUS NAUSEOSUS ----------------------

VARIABLE: ABS_SE       SELENIUM

SUBST        N          MEAN       STD DEV     STD ERROR       MINIMUM       MAXIMUM

    1        0             .             .             .             .             .
    2        0             .             .             .             .             .

VARIANCES          T         DF   PROB > |T|

UNEQUAL            .          .            .
EQUAL              .          .            .

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.
```

```
                         RIO BLANCO OIL SHALE COMPANY
                  EXPERIMENTAL REVEGETATION MONITORING PROGRAM
                             PLANT SAMPLE ANALYSES
                          SELENIUM - ABSOLUTE VALUES
                             SPECIES=LINUM LEWISII

                                TTEST PROCEDURE

VARIABLE: ABS_SE       SELENIUM

SUBST        N          MEAN        STD DEV     STD ERROR       MINIMUM       MAXIMUM

    1        0            .               .             .             .             .
    2        0            .               .             .             .             .

VARIANCES         T         DF   PROB > |T|

UNEQUAL           .          .           .
EQUAL             .          .           .

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.

------------------------ SPECIES=ORYZOPSIS HYMENOIDES ----------------------

VARIABLE: ABS_SE       SELENIUM

SUBST        N          MEAN        STD DEV     STD ERROR       MINIMUM       MAXIMUM

    1        0            .               .             .             .             .
    2        0            .               .             .             .             .

VARIANCES         T         DF   PROB > |T|

UNEQUAL           .          .           .
EQUAL             .          .           .

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.
```

APPENDIX 6-2

Mule Deer Habitat Modification Studies

APPENDIX 6-2.1

Mule Deer Habitat Modification Studies Data

```
                         RIO BLANCO OIL SHALE COMPANY
              TERRESTRIAL STUDIES MONITORING PROGRAM - SPECIAL STUDIES
             HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
                                REPORT YEAR=1982


HABITAT=SAGEBRUSH          TRANSECT=1      ORIENTATION= PERPENDICULAR TO WIND
SEEDING=NOT SEEDED   CHOPPING=NOT CHOPPED     FERTILIZER=NOT FERTILIZED

    PLOT   GROWTH             SPECIES                     SPECIES   COVER    DENSITY
           FORM                                            TYPE


      2    SHRUB    ARTEMISIA TRIDENTATA                  INVADED     2.8         38
      2    SHRUB    SARCOBATUS VERMICULATUS               INVADED      .           1
      3    FORB     CRUCIFERAE SPECIES                    INVADED     1.0          .
      3    SHRUB    ARTEMISIA TRIDENTATA                  INVADED     2.5         39
      6    FORB     CHENOPODIUM SPECIES                   INVADED    13.0          .
      6    FORB     CRUCIFERAE SPECIES                    INVADED     1.0          .
      6    SHRUB    ARTEMISIA TRIDENTATA                  INVADED     2.5         38
      6    SHRUB    CHRYSOTHAMNUS NAUSEOSUS               INVADED      .           1
      7    FORB     CHENOPODIUM SPECIES                   INVADED     1.0          .
      7    FORB     CRUCIFERAE SPECIES                    INVADED     2.0          .
      7    SHRUB    ARTEMISIA TRIDENTATA                  INVADED     1.4         41
      9    FORB     CHENOPODIUM SPECIES                   INVADED    18.0          .
      9    SHRUB    ARTEMISIA TRIDENTATA                  INVADED     0.9         41
     10    FORB     CHENOPODIUM SPECIES                   INVADED    19.0          .
     10    FORB     CRUCIFERAE SPECIES                    INVADED     1.0          .
     10    SHRUB    ARTEMISIA TRIDENTATA                  INVADED     2.0         59
     10    SHRUB    SARCOBATUS VERMICULATUS               INVADED     0.5          2
     11    FORB     CHENOPODIUM SPECIES                   INVADED     5.0          .
     11    FORB     CRUCIFERAE SPECIES                    INVADED     1.0          .
     11    SHRUB    ARTEMISIA TRIDENTATA                  INVADED     1.8         33
     11    SHRUB    SARCOBATUS VERMICULATUS               INVADED      .           2
     12    FORB     CHENOPODIUM SPECIES                   INVADED     1.0          .
     12    FORB     CRUCIFERAE SPECIES                    INVADED     1.0          .
     12    SHRUB    ARTEMISIA TRIDENTATA                  INVADED     1.3         38
     12    SHRUB    CHRYSOTHAMNUS VISCIDIFLORUS           INVADED      .           3
     12    SHRUB    SARCOBATUS VERMICULATUS               INVADED      .           1
```

```
                         RIO BLANCO OIL SHALE COMPANY
          TERRESTRIAL STUDIES MONITORING PROGRAM - SPECIAL STUDIES
        HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
                             REPORT YEAR=1982


HABITAT=SAGEBRUSH          TRANSECT=2     ORIENTATION= PERPENDICULAR TO WIND
SEEDING=NOT SEEDED    CHOPPING=NOT CHOPPED     FERTILIZER=NOT FERTILIZED

     PLOT   GROWTH             SPECIES                  SPECIES   COVER    DENSITY
            FORM                                         TYPE


       7    FORB     CRUCIFERAE SPECIES                 INVADED    1.0        .
       7    SHRUB    ARTEMISIA TRIDENTATA               INVADED    0.4       31
       7    SHRUB    SARCOBATUS VERMICULATUS            INVADED     .         6
      10    SHRUB    ARTEMISIA TRIDENTATA               INVADED    0.6       24
      10    SHRUB    ATRIPLEX SPECIES                   INVADED     .         1
      10    SHRUB    SARCOBATUS VERMICULATUS            INVADED     .         1

HABITAT=SAGEBRUSH          TRANSECT=2     ORIENTATION= PERPENDICULAR TO WIND
SEEDING=NOT SEEDED    CHOPPING=ROTOCHOPPED     FERTILIZER=NOT FERTILIZED

     PLOT   GROWTH             SPECIES                  SPECIES   COVER    DENSITY
            FORM                                         TYPE


       8    FORB     CHENOPODIUM SPECIES                INVADED    5.0        .
       8    FORB     SALSOLA KALI                       INVADED   17.0        .
       8    FORB     UNKNOWN FORB                       INVADED    4.0        .
       8    SHRUB    ARTEMISIA TRIDENTATA               INVADED    1.7       31
       8    SHRUB    ATRIPLEX SPECIES                   INVADED     .         6
       8    SHRUB    SARCOBATUS VERMICULATUS            INVADED     .         3
      11    FORB     CHENOPODIUM SPECIES                INVADED    5.0        .
      11    FORB     SALSOLA KALI                       INVADED   13.0        .
      11    SHRUB    ARTEMISIA TRIDENTATA               INVADED    0.8       31
      11    SHRUB    SARCOBATUS VERMICULATUS            INVADED     .         3

HABITAT=SAGEBRUSH          TRANSECT=2     ORIENTATION= PERPENDICULAR TO WIND
SEEDING=SEEDED        CHOPPING=NOT CHOPPED     FERTILIZER=NOT FERTILIZED

     PLOT   GROWTH             SPECIES                  SPECIES   COVER    DENSITY
            FORM                                         TYPE


       3    FORB     CHENOPODIUM SPECIES                INVADED    1.0        .
       3    FORB     CRUCIFERAE SPECIES                 INVADED    1.0        .
       3    SHRUB    ARTEMISIA TRIDENTATA               INVADED    0.9       37
       3    SHRUB    ATRIPLEX CANESCENS                 INVADED     .         1
       6    FORB     CHENOPODIUM SPECIES                INVADED    1.0        .
       6    FORB     CRUCIFERAE SPECIES                 INVADED    1.0        .
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                         RIO BLANCO OIL SHALE COMPANY
              TERRESTRIAL STUDIES MONITORING PROGRAM - SPECIAL STUDIES
             HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
                               REPORT YEAR=1982

      6    SHRUB    ARTEMISIA TRIDENTATA             INVADED    1.9       26
      6    SHRUB    SARCOBATUS VERMICULATUS          INVADED     .         7


HABITAT=SAGEBRUSH        TRANSECT=2     ORIENTATION= PERPENDICULAR TO WIND
SEEDING=SEEDED       CHOPPING=ROTOCHOPPED    FERTILIZER=NOT FERTILIZED

    PLOT   GROWTH              SPECIES               SPECIES   COVER   DENSITY
           FORM                                       TYPE


      2    FORB     CHENOPODIUM SPECIES              INVADED    4.0        .
      2    FORB     TRIFOLIUM GYMNOCARPON            INVADED    1.0        .
      2    GRASS    AGROPYRON SPECIES                PLANTED    2.0        .
      2    SHRUB    ARTEMISIA TRIDENTATA             INVADED    0.1       53
      5    FORB     CHENOPODIUM SPECIES              INVADED   18.0        .
      5    FORB     SALSOLA KALI                     INVADED    1.0        .
      5    GRASS    AGROPYRON SPECIES                PLANTED    4.0        .
      5    SHRUB    ARTEMISIA TRIDENTATA             INVADED    0.4       31
      5    SHRUB    SARCOBATUS VERMICULATUS          INVADED     .         6
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                         RIO BLANCO OIL SHALE COMPANY
          TERRESTRIAL STUDIES MONITORING PROGRAM - SPECIAL STUDIES
         HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
                              REPORT YEAR=1982


HABITAT=SAGEBRUSH          TRANSECT=3      ORIENTATION= PERPENDICULAR TO WIND
SEEDING=NOT SEEDED    CHOPPING=NOT CHOPPED     FERTILIZER=NOT FERTILIZED

    PLOT   GROWTH              SPECIES                    SPECIES   COVER    DENSITY
           FORM                                            TYPE


     10    SHRUB    ARTEMISIA TRIDENTATA                  INVADED    0.7        19
     10    SHRUB    SARCOBATUS VERMICULATUS               INVADED    1.7         6
     12    FORB     CHENOPODIUM SPECIES                   INVADED    1.0         .
     12    GRASS    SITANION HYSTRIX                      INVADED    2.0         .
     12    SHRUB    ARTEMISIA TRIDENTATA                  INVADED    1.4        31
     12    SHRUB    ATRIPLEX SPECIES                      INVADED     .          2
     12    SHRUB    SARCOBATUS VERMICULATUS               INVADED     .          4

HABITAT=SAGEBRUSH          TRANSECT=3      ORIENTATION= PERPENDICULAR TO WIND
SEEDING=NOT SEEDED    CHOPPING=ROTOCHOPPED     FERTILIZER=NOT FERTILIZED

    PLOT   GROWTH              SPECIES                    SPECIES   COVER    DENSITY
           FORM                                            TYPE


      8    FORB     SALSOLA KALI                          INVADED    5.0         .
      8    SHRUB    ARTEMISIA TRIDENTATA                  INVADED    0.2        32
      8    SHRUB    SARCOBATUS VERMICULATUS               INVADED    0.2         3
     11    FORB     CHENOPODIUM SPECIES                   INVADED    4.0         .
     11    FORB     SALSOLA KALI                          INVADED   14.0         .
     11    GRASS    UNKNOWN GRASS                         INVADED    2.0         .
     11    SHRUB    ARTEMISIA TRIDENTATA                  INVADED     .         27
     11    SHRUB    ATRIPLEX SPECIES                      INVADED     .          1
     11    SHRUB    SARCOBATUS VERMICULATUS               INVADED     .          5

HABITAT=SAGEBRUSH          TRANSECT=3      ORIENTATION= PERPENDICULAR TO WIND
SEEDING=SEEDED        CHOPPING=NOT CHOPPED     FERTILIZER=NOT FERTILIZED

    PLOT   GROWTH              SPECIES                    SPECIES   COVER    DENSITY
           FORM                                            TYPE


      1    FORB     CHENOPODIUM SPECIES                   INVADED    2.0         .
      1    FORB     CRUCIFERAE SPECIES                    INVADED    1.0         .
      1    GRASS    AGROPYRON SPECIES                     PLANTED    1.0         .
      1    SHRUB    ARTEMISIA TRIDENTATA                  INVADED    1.0        21
      1    SHRUB    ATRIPLEX SPECIES                      INVADED     .          1
      1    SHRUB    SARCOBATUS VERMICULATUS               INVADED     .          2
     3    SHRUB   ARTEMISIA TRIDENTATA            INVADED    0.7        31
     3    SHRUB   ATRIPLEX SPECIES                INVADED     .          2
     3    SHRUB   SARCOBATUS VERMICULATUS         INVADED     .          1


HABITAT=SAGEBRUSH        TRANSECT=3      ORIENTATION= PERPENDICULAR TO WIND
SEEDING=SEEDED        CHOPPING=ROTOCHOPPED     FERTILIZER=NOT FERTILIZED

   PLOT   GROWTH            SPECIES                  SPECIES   COVER    DENSITY
          FORM                                        TYPE


     2    FORB    CHENOPODIUM SPECIES             INVADED   21.0         .
     2    FORB    MEDICAGO SATIVA                 PLANTED    1.0         .
     2    GRASS   AGROPYRON SPECIES               PLANTED    1.0         .
     2    SHRUB   ARTEMISIA TRIDENTATA            INVADED    0.8        34
     2    SHRUB   SARCOBATUS VERMICULATUS         INVADED     .          2
     5    FORB    CHENOPODIUM SPECIES             INVADED    2.0         .
     5    GRASS   AGROPYRON SPECIES               PLANTED    2.0         .
     5    SHRUB   ARTEMISIA TRIDENTATA            INVADED    0.9        34
     5    SHRUB   ATRIPLEX SPECIES                INVADED     .          2
     5    SHRUB   SARCOBATUS VERMICULATUS         INVADED     .          1
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                         RIO BLANCO OIL SHALE COMPANY
         TERRESTRIAL STUDIES MONITORING PROGRAM - SPECIAL STUDIES
       HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
                              REPORT YEAR=1982


HABITAT=SAGEBRUSH          TRANSECT=4      ORIENTATION= PERPENDICULAR TO WIND
SEEDING=NOT SEEDED    CHOPPING=NOT CHOPPED     FERTILIZER=FERTILIZED

    PLOT  GROWTH              SPECIES                    SPECIES  COVER    DENSITY
          FORM                                            TYPE


      7   FORB     CHENOPODIUM SPECIES                   INVADED    7.0         .
      7   FORB     CRUCIFERAE SPECIES                    INVADED    1.0         .
      7   FORB     SALSOLA KALI                          INVADED    1.0         .
      7   SHRUB    ARTEMISIA TRIDENTATA                  INVADED    0.4        54
      7   SHRUB    ATRIPLEX SPECIES                      INVADED     .          1
     12   FORB     CHENOPODIUM SPECIES                   INVADED   11.0         .
     12   FORB     CRUCIFERAE SPECIES                    INVADED    1.0         .
     12   SHRUB    ARTEMISIA TRIDENTATA                  INVADED    1.4        39
     12   SHRUB    CHRYSOTHAMNUS NAUSEOSUS               INVADED    0.6         3
     12   SHRUB    CHRYSOTHAMNUS VISCIDIFLORUS           INVADED     .          1

HABITAT=SAGEBRUSH          TRANSECT=4      ORIENTATION= PERPENDICULAR TO WIND
SEEDING=NOT SEEDED    CHOPPING=ROTOCHOPPED     FERTILIZER=FERTILIZED

    PLOT  GROWTH              SPECIES                    SPECIES  COVER    DENSITY
          FORM                                            TYPE


      8   FORB     CHENOPODIUM SPECIES                   INVADED    9.0         .
      8   FORB     SALSOLA KALI                          INVADED    2.0         .
      8   GRASS    SITANION HYSTRIX                      INVADED    1.0         .
      8   SHRUB    ARTEMISIA TRIDENTATA                  INVADED    1.3        48
     11   FORB     CHENOPODIUM SPECIES                   INVADED    9.0         .
     11   FORB     SALSOLA KALI                          INVADED    8.0         .
     11   SHRUB    ARTEMISIA TRIDENTATA                  INVADED    1.1        51
     11   SHRUB    CHRYSOTHAMNUS NAUSEOSUS               INVADED     .          8
     11   SHRUB    CHRYSOTHAMNUS VISCIDIFLORUS           INVADED     .          1

HABITAT=SAGEBRUSH          TRANSECT=4      ORIENTATION= PERPENDICULAR TO WIND
SEEDING=SEEDED        CHOPPING=NOT CHOPPED     FERTILIZER=FERTILIZED

    PLOT  GROWTH              SPECIES                    SPECIES  COVER    DENSITY
          FORM                                            TYPE


      4   FORB     CHENOPODIUM SPECIES                   INVADED    4.0         .
      4   FORB     SALSOLA KALI                          INVADED    1.0         .
      4   SHRUB    ARTEMISIA TRIDENTATA                  INVADED    1.6        31
      4   SHRUB   ATRIPLEX SPECIES                    INVADED      .        1
      6   FORB    CHENOPODIUM SPECIES                 INVADED     2.0       .
      6   FORB    SALSOLA KALI                        INVADED     1.0       .
      6   SHRUB   ARTEMISIA TRIDENTATA                INVADED     1.9      31
      6   SHRUB   CHRYSOTHAMNUS NAUSEOSUS             INVADED     0.3       3


HABITAT=SAGEBRUSH       TRANSECT=4      ORIENTATION= PERPENDICULAR TO WIND
SEEDING=SEEDED       CHOPPING=ROTOCHOPPED    FERTILIZER=FERTILIZED

    PLOT  GROWTH            SPECIES                  SPECIES   COVER   DENSITY
          FORM                                        TYPE


      2   FORB    CHENOPODIUM SPECIES                 INVADED     2.0       .
      2   GRASS   AGROPYRON SPECIES                   PLANTED    19.0       .
      2   SHRUB   ARTEMISIA TRIDENTATA                INVADED     1.7      31
      2   SHRUB   CHRYSOTHAMNUS NAUSEOSUS             INVADED      .        2
      5   FORB    CHENOPODIUM SPECIES                 INVADED     3.0       .
      5   FORB    CRYPTANTHA SERICEA                  INVADED     1.0       .
      5   FORB    MELILOTUS OFFICINALIS               INVADED     1.0       .
      5   FORB    SALSOLA KALI                        INVADED     5.0       .
      5   GRASS   AGROPYRON SPECIES                   PLANTED    17.0       .
      5   SHRUB   ARTEMISIA TRIDENTATA                INVADED     0.7      37
      5   SHRUB   CHRYSOTHAMNUS NAUSEOSUS             INVADED      .        1
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                        RIO BLANCO OIL SHALE COMPANY
           TERRESTRIAL STUDIES MONITORING PROGRAM - SPECIAL STUDIES
          HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
                              REPORT YEAR=1982


HABITAT=SAGEBRUSH          TRANSECT=5      ORIENTATION= PERPENDICULAR TO WIND
SEEDING=NOT SEEDED    CHOPPING=NOT CHOPPED     FERTILIZER=FERTILIZED

    PLOT  GROWTH              SPECIES                    SPECIES  COVER   DENSITY
          FORM                                            TYPE


      9   FORB    CRUCIFERAE SPECIES                     INVADED    4.0        .
      9   SHRUB   ARTEMISIA TRIDENTATA                   INVADED    2.0       36
      9   SHRUB   CHRYSOTHAMNUS NAUSEOSUS                INVADED     .         6
     10   FORB    CHENOPODIUM SPECIES                    INVADED    7.0        .
     10   SHRUB   ARTEMISIA TRIDENTATA                   INVADED    1.2        7
     10   SHRUB   CHRYSOTHAMNUS NAUSEOSUS                INVADED     .         7
     10   SHRUB   CHRYSOTHAMNUS VISCIDIFLORUS            INVADED     .         1

HABITAT=SAGEBRUSH          TRANSECT=5      ORIENTATION= PERPENDICULAR TO WIND
SEEDING=NOT SEEDED    CHOPPING=ROTOCHOPPED     FERTILIZER=FERTILIZED

    PLOT  GROWTH              SPECIES                    SPECIES  COVER   DENSITY
          FORM                                            TYPE


      8   FORB    CHENOPODIUM SPECIES                    INVADED    6.0        .
      8   GRASS   UNKNOWN GRASS                          INVADED    1.0        .
      8   SHRUB   ARTEMISIA TRIDENTATA                   INVADED    1.9       46
      8   SHRUB   CHRYSOTHAMNUS NAUSEOSUS                INVADED     .         9
      8   SHRUB   CHRYSOTHAMNUS VISCIDIFLORUS            INVADED     .         1
     11   FORB    CHENOPODIUM SPECIES                    INVADED    1.0        .
     11   GRASS   SITANION HYSTRIX                       INVADED    1.0        .
     11   SHRUB   ARTEMISIA TRIDENTATA                   INVADED    2.2       56
     11   SHRUB   CHRYSOTHAMNUS NAUSEOSUS                INVADED     .         2

HABITAT=SAGEBRUSH          TRANSECT=5      ORIENTATION= PERPENDICULAR TO WIND
SEEDING=SEEDED        CHOPPING=NOT CHOPPED     FERTILIZER=FERTILIZED

    PLOT  GROWTH              SPECIES                    SPECIES  COVER   DENSITY
          FORM                                            TYPE


      1   FORB    CHENOPODIUM SPECIES                    INVADED    4.0        .
      1   SHRUB   ARTEMISIA TRIDENTATA                   INVADED    1.1       37
      6   FORB    CHENOPODIUM SPECIES                    INVADED   23.0        .
      6   FORB    CRUCIFERAE SPECIES                     INVADED    9.0        .
      6   FORB    UNKNOWN FORB                           INVADED    3.0        .
      6   GRASS   AGROPYRON CRISTATUM                    INVADED    1.0        .
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                         RIO BLANCO OIL SHALE COMPANY
            TERRESTRIAL STUDIES MONITORING PROGRAM - SPECIAL STUDIES
          HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
                               REPORT YEAR=1982

      6    SHRUB    ARTEMISIA TRIDENTATA              INVADED    1.9       45
      6    SHRUB    CHRYSOTHAMNUS NAUSEOSUS           INVADED     .         2
      6    SHRUB    CHRYSOTHAMNUS VISCIDIFLORUS       INVADED     .         1


HABITAT=SAGEBRUSH         TRANSECT=5      ORIENTATION= PERPENDICULAR TO WIND
SEEDING=SEEDED        CHOPPING=ROTOCHOPPED     FERTILIZER=FERTILIZED

    PLOT   GROWTH             SPECIES                 SPECIES  COVER   DENSITY
           FORM                                        TYPE


      2    FORB     CHENOPODIUM SPECIES               INVADED    9.0        .
      2    GRASS    AGROPYRON SPECIES                 PLANTED    9.0        .
      2    SHRUB    ARTEMISIA TRIDENTATA              INVADED    0.9       51
      5    FORB     CHENOPODIUM SPECIES               INVADED    2.0        .
      5    FORB     UNKNOWN FORB                      INVADED    3.0        .
      5    GRASS    AGROPYRON SPECIES                 PLANTED    5.0        .
      5    SHRUB    ARTEMISIA TRIDENTATA              INVADED    7.2       54
      5    SHRUB    CHRYSOTHAMNUS NAUSEOSUS           INVADED    3.4        4
      5    SHRUB    CHRYSOTHAMNUS VISCIDIFLORUS       INVADED     .         5
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RIO BLANCO OIL SHALE COMPANY
TERRESTRIAL STUDIES MONITORING PROGRAM - SPECIAL STUDIES
HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
REPORT YEAR=1982

HABITAT=SAGEBRUSH TRANSECT=6 ORIENTATION= PERPENDICULAR TO WIND
SEEDING=NOT SEEDED CHOPPING=NOT CHOPPED FERTILIZER=NOT FERTILIZED

PLOT	GROWTH FORM	SPECIES	SPECIES TYPE	COVER	DENSITY
1	FORB	CHENOPODIUM SPECIES	INVADED	7.0	.
1	FORB	CRUCIFERAE SPECIES	INVADED	1.0	.
1	SHRUB	ARTEMISIA TRIDENTATA	INVADED	1.7	36
1	SHRUB	CHRYSOTHAMNUS NAUSEOSUS	INVADED	.	3
2	FORB	CHENOPODIUM SPECIES	INVADED	1.0	.
2	FORB	CRUCIFERAE SPECIES	INVADED	2.0	.
2	GRASS	ORYZOPSIS HYMENOIDES	INVADED	1.0	.
2	SHRUB	ARTEMISIA TRIDENTATA	INVADED	2.7	46
2	SHRUB	CHRYSOTHAMNUS NAUSEOSUS	INVADED	0.6	2
3	FORB	CHENOPODIUM SPECIES	INVADED	2.0	.
3	SHRUB	ARTEMISIA TRIDENTATA	INVADED	1.8	40
3	SHRUB	CHRYSOTHAMNUS NAUSEOSUS	INVADED	.	1
3	SHRUB	CHRYSOTHAMNUS VISCIDIFLORUS	INVADED	.	1
6	SHRUB	ARTEMISIA TRIDENTATA	INVADED	2.7	48
7	FORB	CHENOPODIUM SPECIES	INVADED	6.0	.
7	FORB	CRUCIFERAE SPECIES	INVADED	3.0	.
7	SHRUB	ARTEMISIA TRIDENTATA	INVADED	1.7	38
7	SHRUB	CHRYSOTHAMNUS NAUSEOSUS	INVADED	.	1
10	FORB	CHENOPODIUM SPECIES	INVADED	16.0	.
10	FORB	CRUCIFERAE SPECIES	INVADED	7.0	.
10	SHRUB	ARTEMISIA TRIDENTATA	INVADED	1.9	38
10	SHRUB	CHRYSOTHAMNUS NAUSEOSUS	INVADED	.	2
11	FORB	CHENOPODIUM SPECIES	INVADED	13.0	.
11	FORB	CRUCIFERAE SPECIES	INVADED	11.0	.
11	GRASS	SITANION HYSTRIX	INVADED	1.0	.
11	SHRUB	ARTEMISIA TRIDENTATA	INVADED	2.5	24
11	SHRUB	CHRYSOTHAMNUS NAUSEOSUS	INVADED	.	4
12	FORB	CHENOPODIUM SPECIES	INVADED	25.0	.
12	FORB	CRUCIFERAE SPECIES	INVADED	2.0	.
12	SHRUB	ARTEMISIA TRIDENTATA	INVADED	2.4	31
12	SHRUB	CHRYSOTHAMNUS NAUSEOSUS	INVADED	0.1	3

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                         RIO BLANCO OIL SHALE COMPANY
             TERRESTRIAL STUDIES MONITORING PROGRAM - SPECIAL STUDIES
            HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
                               REPORT YEAR=1982


HABITAT=SAGEBRUSH          TRANSECT=7      ORIENTATION= PARALLEL TO WIND
SEEDING=NOT SEEDED   CHOPPING=NOT CHOPPED    FERTILIZER=NOT FERTILIZED

    PLOT  GROWTH              SPECIES                   SPECIES  COVER   DENSITY
          FORM                                           TYPE


      1   FORB    CHENOPODIUM SPECIES                   INVADED    2.0        .
      1   FORB    CRUCIFERAE SPECIES                    INVADED    8.0        .
      1   FORB    CRYPTANTHA SERICEA                    INVADED    3.0        .
      1   FORB    LITHOSPERMUM SPECIES                  INVADED    2.0        .
      1   GRASS   AGROPYRON SPECIES                     INVADED    2.0        .
      1   SHRUB   ARTEMISIA TRIDENTATA                  INVADED    1.7       28
      1   SHRUB   CHRYSOTHAMNUS NAUSEOSUS               INVADED     .         2
      1   SHRUB   CHRYSOTHAMNUS NAUSEOSUS               INVADED     .         3
      2   FORB    LOMATIUM ORIENTALE                    INVADED    1.0        .
      2   SHRUB   ARTEMISIA TRIDENTATA                  INVADED    1.7       29
      5   FORB    CHENOPODIUM SPECIES                   INVADED    3.0        .
      5   FORB    LITHOSPERMUM SPECIES                  INVADED    3.0        .
      5   SHRUB   ARTEMISIA TRIDENTATA                  INVADED    1.8       40
      5   SHRUB   CHRYSOTHAMNUS VISCIDIFLORUS           INVADED    0.1        2
      7   FORB    CHENOPODIUM SPECIES                   INVADED    2.0        .
      7   FORB    LITHOSPERMUM SPECIES                  INVADED    4.0        .
      7   FORB    SALSOLA KALI                          INVADED    1.0        .
      7   SHRUB   ARTEMISIA TRIDENTATA                  INVADED    2.3       36
      7   SHRUB   CHRYSOTHAMNUS VISCIDIFLORUS           INVADED    0.3        .
      8   FORB    CRYPTANTHA SERICEA                    INVADED    2.0        .
      8   FORB    LOMATIUM ORIENTALE                    INVADED    1.0        .
      8   FORB    MACHAERANTHERA CANESCANS              INVADED    1.0        .
      8   SHRUB   ARTEMISIA TRIDENTATA                  INVADED    1.1       34
     10   FORB    CHENOPODIUM SPECIES                   INVADED    3.0        .
     10   SHRUB   ARTEMISIA TRIDENTATA                  INVADED    2.1       29
     11   FORB    CHENOPODIUM SPECIES                   INVADED   13.0        .
     11   SHRUB   ARTEMISIA TRIDENTATA                  INVADED    4.6       21
     12   FORB    CHENOPODIUM SPECIES                   INVADED    3.0        .
     12   FORB    CRUCIFERAE SPECIES                    INVADED    1.0        .
     12   FORB    LOMATIUM ORIENTALE                    INVADED    1.0        .
     12   SHRUB   ARTEMISIA TRIDENTATA                  INVADED    3.1       25
     12   SHRUB   CHRYSOTHAMNUS NAUSEOSUS               INVADED     .         2
     12   SHRUB   CHRYSOTHAMNUS VISCIDIFLORUS           INVADED     .         1
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                              RIO BLANCO OIL SHALE COMPANY
               TERRESTRIAL STUDIES MONITORING PROGRAM - SPECIAL STUDIES
             HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
                                  REPORT YEAR=1982


HABITAT=SAGEBRUSH        TRANSECT=8     ORIENTATION= PARALLEL TO WIND
SEEDING=NOT SEEDED   CHOPPING=NOT CHOPPED    FERTILIZER=FERTILIZED

    PLOT  GROWTH             SPECIES                   SPECIES  COVER   DENSITY
          FORM                                          TYPE


      4   FORB    CHENOPODIUM SPECIES                  INVADED   45.0        .
      4   SHRUB   ARTEMISIA TRIDENTATA                 INVADED    1.3       43
      6   FORB    CHENOPODIUM SPECIES                  INVADED   21.0        .
      6   FORB    LOMATIUM ORIENTALE                   INVADED    1.0        .
      6   SHRUB   ARTEMISIA TRIDENTATA                 INVADED    2.6       30
      6   SHRUB   CHRYSOTHAMNUS VISCIDIFLORUS          INVADED     .         1

HABITAT=SAGEBRUSH        TRANSECT=8     ORIENTATION= PARALLEL TO WIND
SEEDING=NOT SEEDED   CHOPPING=ROTOCHOPPED    FERTILIZER=FERTILIZED

    PLOT  GROWTH             SPECIES                   SPECIES  COVER   DENSITY
          FORM                                          TYPE


      2   FORB    CHENOPODIUM SPECIES                  INVADED   17.0        .
      2   FORB    LOMATIUM ORIENTALE                   INVADED    1.0        .
      2   SHRUB   ARTEMISIA TRIDENTATA                 INVADED    1.8       77
      5   FORB    CHENOPODIUM SPECIES                  INVADED   16.0        .
      5   FORB    LOMATIUM ORIENTALE                   INVADED    1.0        .
      5   SHRUB   ARTEMISIA TRIDENTATA                 INVADED    0.8       58
      5   SHRUB   CHRYSOTHAMNUS NAUSEOSUS              INVADED     .         2

HABITAT=SAGEBRUSH        TRANSECT=8     ORIENTATION= PARALLEL TO WIND
SEEDING=SEEDED       CHOPPING=NOT CHOPPED    FERTILIZER=FERTILIZED

    PLOT  GROWTH             SPECIES                   SPECIES  COVER   DENSITY
          FORM                                          TYPE


      7   FORB    CHENOPODIUM SPECIES                  INVADED   16.0        .
      7   FORB    CRUCIFERAE SPECIES                   INVADED   28.0        .
      7   SHRUB   ARTEMISIA TRIDENTATA                 INVADED    0.8       53
      7   SHRUB   CHRYSOTHAMNUS NAUSEOSUS              INVADED     .         1
     12   FORB    CHENOPODIUM SPECIES                  INVADED    4.0        .
     12   SHRUB   ARTEMISIA TRIDENTATA                 INVADED    3.7       30
     12   SHRUB   CHRYSOTHAMNUS NAUSEOSUS              INVADED     .         1
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       HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
                          REPORT YEAR=1982

HABITAT=SAGEBRUSH        TRANSECT=8      ORIENTATION= PARALLEL TO WIND
SEEDING=SEEDED       CHOPPING=ROTOCHOPPED     FERTILIZER=FERTILIZED

    PLOT  GROWTH            SPECIES                   SPECIES  COVER   DENSITY
          FORM                                         TYPE


      8   FORB    CHENOPODIUM SPECIES                 INVADED   4.0         .
      8   FORB    CRUCIFERAE SPECIES                  INVADED  24.0         .
      8   SHRUB   ARTEMISIA TRIDENTATA                INVADED   1.0        48
      8   SHRUB   CHRYSOTHAMNUS NAUSEOSUS             INVADED    .          1
     11   FORB    CHENOPODIUM SPECIES                 INVADED   2.0         .
     11   GRASS   AGROPYRON SPECIES                   INVADED  11.0         .
     11   SHRUB   ARTEMISIA TRIDENTATA                INVADED   2.0        51
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              HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
                                REPORT YEAR=1982


HABITAT=SAGEBRUSH         TRANSECT=9      ORIENTATION= PARALLEL TO WIND
SEEDING=NOT SEEDED    CHOPPING=NOT CHOPPED     FERTILIZER=FERTILIZED

    PLOT  GROWTH             SPECIES                     SPECIES   COVER    DENSITY
          FORM                                            TYPE


      1   FORB     CHENOPODIUM SPECIES                   INVADED   27.0          .
      1   SHRUB    ARTEMISIA TRIDENTATA                  INVADED    1.4         41
      6   FORB     CHENOPODIUM SPECIES                   INVADED   16.0          .
      6   SHRUB    ARTEMISIA TRIDENTATA                  INVADED    3.7         44

HABITAT=SAGEBRUSH         TRANSECT=9      ORIENTATION= PARALLEL TO WIND
SEEDING=NOT SEEDED    CHOPPING=ROTOCHOPPED     FERTILIZER=FERTILIZED

    PLOT  GROWTH             SPECIES                     SPECIES   COVER    DENSITY
          FORM                                            TYPE


      2   FORB     CHENOPODIUM SPECIES                   INVADED    1.0          .
      2   FORB     CRUCIFERAE SPECIES                    INVADED    1.0          .
      2   SHRUB    ARTEMISIA TRIDENTATA                  INVADED    1.8         66
      5   FORB     CHENOPODIUM SPECIES                   INVADED   35.0          .
      5   SHRUB    ARTEMISIA TRIDENTATA                  INVADED    1.6         58

HABITAT=SAGEBRUSH         TRANSECT=9      ORIENTATION= PARALLEL TO WIND
SEEDING=SEEDED        CHOPPING=NOT CHOPPED     FERTILIZER=FERTILIZED

    PLOT  GROWTH             SPECIES                     SPECIES   COVER    DENSITY
          FORM                                            TYPE


      7   FORB     CHENOPODIUM SPECIES                   INVADED   68.0          .
      7   FORB     CRUCIFERAE SPECIES                    INVADED   19.0          .
      7   SHRUB    ARTEMISIA TRIDENTATA                  INVADED    1.1         38
      7   SHRUB    CHRYSOTHAMNUS NAUSEOSUS               INVADED     .           1
     12   FORB     CHENOPODIUM SPECIES                   INVADED    1.0          .
     12   FORB     SALSOLA KALI                          INVADED    1.0          .
     12   SHRUB    ARTEMISIA TRIDENTATA                  INVADED    1.8         42
     12   SHRUB    CHRYSOTHAMNUS NAUSEOSUS               INVADED     .           1

HABITAT=SAGEBRUSH         TRANSECT=9      ORIENTATION= PARALLEL TO WIND
SEEDING=SEEDED        CHOPPING=ROTOCHOPPED     FERTILIZER=FERTILIZED
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              HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
                                  REPORT YEAR=1982

 PLOT  GROWTH          ' SPECIES                       SPECIES  COVER   DENSITY
       FORM                                             TYPE


   8   FORB    CHENOPODIUM SPECIES                    INVADED   13.0          .
   8   FORB    SALSOLA KALI                           INVADED    1.0          .
   8   GRASS   AGROPYRON SPECIES                      PLANTED    3.0          .
   8   SHRUB   ARTEMISIA TRIDENTATA                   INVADED    3.1         38
   8   SHRUB   SARCOBATUS VERMICULATUS                INVADED     .           1
  11   FORB    CHENOPODIUM SPECIES                    INVADED   13.0          .
  11   FORB    CRUCIFERAE SPECIES                     INVADED    1.0          .
  11   GRASS   AGROPYRON SPECIES                      PLANTED   11.0          .
  11   GRASS   SITANION HYSTRIX                       INVADED    1.0          .
  11   SHRUB   ARTEMISIA TRIDENTATA                   INVADED    1.9         61
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            TERRESTRIAL STUDIES MONITORING PROGRAM - SPECIAL STUDIES
          HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
                               REPORT YEAR=1982



HABITAT=SAGEBRUSH          TRANSECT=10    ORIENTATION= PARALLEL TO WIND
SEEDING=NOT SEEDED   CHOPPING=NOT CHOPPED    FERTILIZER=NOT FERTILIZED

    PLOT  GROWTH            SPECIES                   SPECIES  COVER   DENSITY
          FORM                                         TYPE


      1   FORB    CHENOPODIUM SPECIES                 INVADED    1.0        .
      1   FORB    CRUCIFERAE SPECIES                  INVADED    8.0        .
      1   FORB    CRYPTANTHA SERICEA                  INVADED    1.0        .
      1   FORB    PHYSARIA FLORIBUNDA                 INVADED    1.0        .
      1   GRASS   ORYZOPSIS HYMENOIDES                INVADED    2.0        .
      1   SHRUB   ARTEMISIA TRIDENTATA                INVADED    2.6       42
      3   FORB    CHENOPODIUM SPECIES                 INVADED   47.0        .
      3   FORB    CRUCIFERAE SPECIES                  INVADED   17.0        .
      3   SHRUB   ARTEMISIA TRIDENTATA                INVADED    3.0       24

HABITAT=SAGEBRUSH          TRANSECT=10    ORIENTATION= PARALLEL TO WIND
SEEDING=NOT SEEDED   CHOPPING=ROTOCHOPPED    FERTILIZER=NOT FERTILIZED

    PLOT  GROWTH            SPECIES                   SPECIES  COVER   DENSITY
          FORM                                         TYPE


      2   FORB    CHENOPODIUM SPECIES                 INVADED    6.0        .
      2   GRASS   ORYZOPSIS HYMENOIDES                INVADED    3.0        .
      2   SHRUB   ARTEMISIA TRIDENTATA                INVADED    1.6       48
      5   FORB    CHENOPODIUM SPECIES                 INVADED    9.0        .
      5   FORB    CRUCIFERAE SPECIES                  INVADED    2.0        .
      5   SHRUB   ARTEMISIA TRIDENTATA                INVADED    1.4       42

HABITAT=SAGEBRUSH          TRANSECT=10    ORIENTATION= PARALLEL TO WIND
SEEDING=SEEDED       CHOPPING=NOT CHOPPED    FERTILIZER=NOT FERTILIZED

    PLOT  GROWTH            SPECIES                   SPECIES  COVER   DENSITY
          FORM                                         TYPE


      7   FORB    CHENOPODIUM SPECIES                 INVADED    1.0        .
      7   SHRUB   ARTEMISIA TRIDENTATA                INVADED    1.5       52
      9   FORB    CHENOPODIUM SPECIES                 INVADED    1.0        .
      9   SHRUB   ARTEMISIA TRIDENTATA                INVADED    2.5       48

HABITAT=SAGEBRUSH          TRANSECT=10    ORIENTATION= PARALLEL TO WIND
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TERRESTRIAL STUDIES MONITORING PROGRAM - SPECIAL STUDIES
HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
REPORT YEAR=1982

SEEDING=SEEDED CHOPPING=ROTOCHOPPED FERTILIZER=NOT FERTILIZED

PLOT	GROWTH FORM	SPECIES	SPECIES TYPE	COVER	DENSITY
8	FORB	CHENOPODIUM SPECIES	INVADED	9.0	.
8	FORB	TRIFOLIUM GYMNOCARPON	INVADED	1.0	.
8	GRASS	AGROPYRON SPECIES	PLANTED	3.0	.
8	SHRUB	ARTEMISIA TRIDENTATA	INVADED	1.5	54
11	FORB	CHENOPODIUM SPECIES	INVADED	8.0	.
11	FORB	CRUCIFERAE SPECIES	INVADED	4.0	.
11	SHRUB	ARTEMISIA TRIDENTATA	INVADED	0.4	34

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            TERRESTRIAL STUDIES MONITORING PROGRAM - SPECIAL STUDIES
           HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
                              REPORT YEAR=1982


HABITAT=SAGEBRUSH          TRANSECT=11    ORIENTATION= PARALLEL TO WIND
SEEDING=NOT SEEDED   CHOPPING=NOT CHOPPED    FERTILIZER=NOT FERTILIZED

    PLOT  GROWTH             SPECIES                     SPECIES  COVER   DENSITY
          FORM                                            TYPE


      3   FORB    CHENOPODIUM SPECIES                    INVADED   17.0         .
      3   FORB    CRUCIFERAE SPECIES                     INVADED    1.0         .
      3   SHRUB   ARTEMISIA TRIDENTATA                   INVADED    2.6        39
      6   FORB    CHENOPODIUM SPECIES                    INVADED    2.0         .
      6   SHRUB   ARTEMISIA TRIDENTATA                   INVADED    2.5        44

HABITAT=SAGEBRUSH          TRANSECT=11    ORIENTATION= PARALLEL TO WIND
SEEDING=NOT SEEDED   CHOPPING=ROTOCHOPPED    FERTILIZER=NOT FERTILIZED

    PLOT  GROWTH             SPECIES                     SPECIES  COVER   DENSITY
          FORM                                            TYPE


      2   FORB    CHENOPODIUM SPECIES                    INVADED    1.0         .
      2   FORB    CRUCIFERAE SPECIES                     INVADED    2.0         .
      2   GRASS   AGROPYRON SPECIES                      INVADED    1.0         .
      2   SHRUB   ARTEMISIA TRIDENTATA                   INVADED    1.6        69
      5   FORB    CHENOPODIUM SPECIES                    INVADED    5.0         .
      5   SHRUB   ARTEMISIA TRIDENTATA                   INVADED    1.2        47

HABITAT=SAGEBRUSH          TRANSECT=11    ORIENTATION= PARALLEL TO WIND
SEEDING=SEEDED       CHOPPING=NOT CHOPPED    FERTILIZER=NOT FERTILIZED

    PLOT  GROWTH             SPECIES                     SPECIES  COVER   DENSITY
          FORM                                            TYPE


     10   FORB    CRUCIFERAE SPECIES                     INVADED    6.0         .
     10   SHRUB   ARTEMISIA TRIDENTATA                   INVADED    2.1        38
     12   FORB    CRUCIFERAE SPECIES                     INVADED   21.0         .
     12   SHRUB   ARTEMISIA TRIDENTATA                   INVADED    1.8        36

HABITAT=SAGEBRUSH          TRANSECT=11    ORIENTATION= PARALLEL TO WIND
SEEDING=SEEDED       CHOPPING=ROTOCHOPPED    FERTILIZER=NOT FERTILIZED

    PLOT  GROWTH             SPECIES                     SPECIES  COVER   DENSITY
          FORM                                            TYPE
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           TERRESTRIAL STUDIES MONITORING PROGRAM - SPECIAL STUDIES
          HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
                               REPORT YEAR=1982


  8   FORB    CHENOPODIUM SPECIES               INVADED   13.0          .
  8   FORB    CRUCIFERAE SPECIES                INVADED    1.0          .
  8   GRASS   AGROPYRON SPECIES                 PLANTED    1.0          .
  8   SHRUB   ARTEMISIA TRIDENTATA              INVADED    2.2         48
 11   FORB    CHENOPODIUM SPECIES               INVADED    6.0          .
 11   FORB    CRUCIFERAE SPECIES                INVADED    2.0          .
 11   GRASS   AGROPYRON SPECIES                 PLANTED    9.0          .
 11   GRASS   SITANION HYSTRIX                  INVADED    1.0          .
 11   SHRUB   ARTEMISIA TRIDENTATA              INVADED    0.9         38
 11   SHRUB   CHRYSOTHAMNUS NAUSEOSUS           INVADED     .           1
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TERRESTRIAL STUDIES MONITORING PROGRAM - SPECIAL STUDIES
HABITAT MODIFICATION STUDY - MULE DEER HABITAT ENHANCEMENT
REPORT YEAR=1982

HABITAT=SAGEBRUSH TRANSECT=12 ORIENTATION= PARALLEL TO WIND
SEEDING=NOT SEEDED CHOPPING=NOT CHOPPED FERTILIZER=NOT FERTILIZED

PLOT	GROWTH FORM	SPECIES	SPECIES TYPE	COVER	DENSITY
2	FORB	CHENOPODIUM SPECIES	INVADED	64.0	.
2	FORB	CRUCIFERAE SPECIES	INVADED	4.0	.
2	FORB	LOMATIUM ORIENTALE	INVADED	3.0	.
2	SHRUB	ARTEMISIA TRIDENTATA	INVADED	3.5	27
3	FORB	CHENOPODIUM SPECIES	INVADED	29.0	.
3	SHRUB	ARTEMISIA TRIDENTATA	INVADED	3.3	31
5	FORB	CHENOPODIUM SPECIES	INVADED	1.0	.
5	FORB	CRUCIFERAE SPECIES	INVADED	6.0	.
5	SHRUB	ARTEMISIA TRIDENTATA	INVADED	2.9	46
6	FORB	CRUCIFERAE SPECIES	INVADED	2.0	.
6	SHRUB	ARTEMISIA TRIDENTATA	INVADED	2.7	38
8	FORB	CRUCIFERAE SPECIES	INVADED	9.0	.
8	SHRUB	ARTEMISIA TRIDENTATA	INVADED	2.0	49
10	FORB	CHENOPODIUM SPECIES	INVADED	1.0	.
10	FORB	CRUCIFERAE SPECIES	INVADED	1.0	.
10	SHRUB	ARTEMISIA TRIDENTATA	INVADED	2.1	40
11	FORB	CHENOPODIUM SPECIES	INVADED	4.0	.
11	FORB	CRUCIFERAE SPECIES	INVADED	6.0	.
11	SHRUB	ARTEMISIA TRIDENTATA	INVADED	1.3	31
12	FORB	CRUCIFERAE SPECIES	INVADED	12.0	.
12	SHRUB	ARTEMISIA TRIDENTATA	INVADED	2.6	36

APPENDIX 6-2.2

Analyses for Mule Deer Habitat Modification Data

Duncan's Multiple Range Test results for significant main effect differences as identified for analyses summarized on Table 6-21.

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        HABITAT MODIFICATION STUDY - MULEDEER HABITAT ENHANCEMENT

                   THREE-WAY MODEL I ANALYSIS OF VARIANCE
                  WITHOUT TREATMENT INTERACTIONS CALCULATED
                     ORIENTATION=PARALLEL TO WIND

                    GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: ASPC
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=347  MSE=.0157088
HARMONIC MEAN OF CELL SIZES=151.795

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING              MEAN      N  FERTILIZ

                A           0.17659    111  FERTILIZED

                B           0.12477    240  NOT FERTILIZED
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         HABITAT MODIFICATION STUDY - MULEDEER HABITAT ENHANCEMENT

                  THREE-WAY MODEL I ANALYSIS OF VARIANCE
                 WITHOUT TREATMENT INTERACTIONS CALCULATED
                       ORIENTATION=PARALLEL TO WIND

                      GENERAL LINEAR MODELS PROCEDURE

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: DENSITY
NOTE: THIS TEST CONTROLS ERROR RATES AT DIFFERENT LEVELS
      DEPENDING ON THE NUMBER OF MEANS BETWEEN EACH PAIR
      BEING COMPARED. ITS OPERATING CHARACTERISTICS SOMEWHAT
      RESEMBLE FISHER'S UNPROTECTED LSD TEST.
ALPHA=0.05  DF=179  MSE=2.71093
HARMONIC MEAN OF CELL SIZES=77.7268

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN   GROUPING                MEAN      N  CHOP

                A              3.5786     56  ROTOCHOPPED

                B              2.7819    127  NOT CHOPPED
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